1933

The intelligence of Montana high school juniors

Evelyn G. Rimel
The University of Montana

THE INTELLIGENCE

of

MONTANA HIGH SCHOOL JUNIORS

by

Evelyn L. Finnell

Presented in partial fulfillment of the requirement for the degree of Master of Arts.

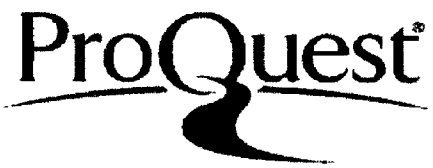
State University of Montana

1933

Approved:

Truman L. Daughters
Chairman of Examining Committee

W. G. Bateman
Chairman of Graduate Committee



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ACKNOWLEDGMENTS

In the collection of the data for this study I am indebted to many people. I wish to thank Dr. Daughters and Dr. Ames for their part in giving the tests and questionnaires in 1925. Without this early information the investigation of the fulfillment of intentions could not have been made a part of this study. I wish to thank the principals and superintendents for their willingness to cooperate both in the giving of the tests and questionnaires and the excellent manner in which they filled out the follow-up questionnaire this spring; Dr. Ames for the scoring of all the mental tests and also for the many hints and suggestions given me; Mr. Hoffstetter who copied the Mental Test scores on the upper right hand corner of the questionnaires for about one-half of the juniors; all those fellow university students who gave me information concerning their high school classmates; Miss Helen Griffin for her painstaking work in checking the correctness of many of the enclosed tables. To Dr. Daughters I am indebted for his counsel and guidance throughout this study.

INTRODUCTION

The intelligence testing movement is a recent development. The first successful attempt to measure intelligence was made by Binet assisted by Simon in France during the early part of the twentieth century. This brought on the evolution of measuring scales. These measuring scales have been along two main lines: individual tests and group tests. The individual test was evolved first. The Stanford Revision of the Binet-Simon Test made by Terman remains the best known individual test.

At the outbreak of the World War, Otis had practically completed a group intelligence test. His efforts were taken over by the United States government. Along with a group of noted psychologists the Army Alpha and Army Beta, Group Tests, were developed. These were used in the United States army during the late war. The results of these tests served to give mental testing its greatest impetus.

Group intelligence tests in 1919 were first used for state-wide surveys of the educational product in our secondary schools. Book, Professor of Psychology in Indiana State University, was the pioneer in the state-wide survey movement. He surveyed the intelligence of Indiana high school seniors. It involved the testing of 6,188 students from 320 commissioned high schools. The intelligence

test used was developed in the Psychology Department of the Indiana State University. A questionnaire supplemented the mental test requesting certain personal data concerning each student. This survey is the most extensively reported of the state-wide surveys that have been made. From an intensive analysis of the data obtained, Book reached the conclusions which are briefly given below:

1. High school seniors are a select group.
2. Marked individual differences exist among the seniors of different schools, communities and sections of the state.
3. Superior pupils are found in all types of schools, communities and sections of the state, and from nearly all occupational and economic classes.
4. The high schools are not adapted to the varied capacities, interests and occupational needs of their pupils.
5. Many of the most superior students do not plan to enter college while many with the most inferior degree of intelligence plan to attend college.
6. The high schools expend very little effort to locate and provide for their superior students.
7. The high schools are not properly equipping their students for their vocations in life.
8. The high schools meet the needs of those students only who possess certain types of interests and abilities.
9. The high schools are not truly democratic.
10. The high schools are better adapted to the intellectual needs of the girls than of the boys.
11. Class, school and community differences have often been overlooked.
12. Intelligence is no guarantee of school success. [1]

Batson in 1921 carried on a survey in twenty-seven South Dakota high schools. He surveyed the students in the

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1. William F. Book, Intelligence of High School Seniors As Revealed By A State-Wide Survey of Indiana High Schools. (New York, 1922) pp.1-16, 293-310.

four classes using a battery of tests and a questionnaire. Although his study was not as extensive as that of Book, his results were similar. [2]

During December 1922 and the early part of 1923 Colvin and MacPhail conducted a similar survey of Seniors in the Massachusetts high schools. They used the Brown Psychological Examination which was given to 3,333 seniors. The mental examination was supplemented by a questionnaire. The most important conclusions reached by these men were:

1. About one-half of the Massachusetts seniors planning to go to college have reasonable prospects for success in a college of liberal arts.
2. Nearly one-third of the seniors not planning to continue their education would probably be successful.
3. Boys represent a greater range of choice in their high school curricula.
4. About five-sixths of the seniors have chosen their ultimate life occupation.
5. Intelligence ratings of the students are in direct relation to the size of the family income.
6. Native-born seniors are superior to all other nationality groups in score ratings. [3]

Ruch conducted a similar study in the Iowa high schools in 1923. He tested approximately 1550 seniors in thirty-eight schools. The regular Freshman Entrance Examination of the

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2. William H. Batson, "The South Dakota Group Intelligence Tests for High Schools" in School and Society, XV (1922) pp. 311-315.
3. Stephen S. Colvin, and A. H. MacPhail, Intelligence of Seniors in the High Schools of Massachusetts: United States Government Report, Dept. of Interior (Bureau of Education Bulletin, 1924, No. 9), pp. 1-39.

University of Iowa was used.[4]

Trabue, Mann and Holland carried on a study in North Carolina in the same year. They tested 880 seniors. Their studies were based jointly on a questionnaire, tests of silent reading, English composition and general academic ability.[5]

In the autumn of 1923 Odell made a similar investigation in Illinois. Twelve thousand three hundred seniors from 368 high schools were examined. The data were secured from the Otis Self-Administering Test of Mental Ability supplemented with a questionnaire.[6]

In 1927 O'Brien conducted a survey among sixty high schools in Kansas. The Termah Group Test of Mental Ability was given to more than 4,000 juniors and seniors. The Terman scores were correlated with the scores on the Otis Self-Administering Test and also with the scores of those students who later entered the University of Kansas.[7]

Corberich in 1928 put into one complete report the results of the Iowa High School Surveys made from 1923 to 1928. Ruch's

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4. G.M.Ruch, A Mental-Educational Survey of 1550 Iowa High School Seniors; University of Iowa Studies, First Series, (Studies in Education, Vol. II, No. 5), pp. 1-29.
5. M.R.Trabue, "Some Products of North Carolina's Public High Schools" in High School Journal ,V (1919), pp. 3-8.
6. Charles W.Odell, Conservation of Intelligence in Illinois High Schools; University of Illinois Bulletin(Bureau of Educational Research Bulletin, Vol.XXII,No.22), pp.1-55.
7. F.P.O'Brien, "Mental Ability with Reference to Selection and Retention of College Students", in Journal of Educational Research, XVIII (1928).

study, mentioned earlier, was the first survey in this series. During these years the batteries of tests were given to 10,437 seniors from twenty-two high schools.[8]

During the latter part of this survey movement Montana became a fertile ground for similar studies. W. R. Ames, Professor of Education at the State University of Montana, investigated the intelligence of Montana high school seniors in 1925. His most important conclusions were:

1. Considerable variation was found in the median scores of the different schools.
2. Boys are slightly superior to the girls in median scores.
3. Boys are not rated by their principal as highly in scholarship as girls.
4. More than 87% of Montana seniors state they intend to go to some higher institution.[9]

About the same time Ruth MacFarlane studied the intelligence of the Indians in Montana schools. Briefly her conclusions were:

1. I.Q.'s are lower for Indians than for the whites.
2. Full-blooded Indians show lower I.Q.'s than Indians of mixed blood.
3. No substantial differences between intelligence, levels of boys and girls studied.
4. Nearly 50% of the Indians are retarded.
5. Indians in attendance at "white" schools rank four points higher in median I.Q. than the Indians in attendance at Indian schools.

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8. Joseph R. Gerberich, A Personnel Study of 10,000 Iowa High School Seniors, University of Iowa Studies, New Series, No. 177, (Studies in Education, Vol. V, No.3)
9. W. R. Ames, Intelligence of Montana High School Seniors; Thesis, University of Wisconsin (1926).

6. In the upper grades and high school, nearly 80% of the Indians plan to continue their education.[10]

In the same year Sister O'Dea studied the intelligence of the students enrolled in the Catholic schools of the State. This study covered both the elementary and high school students. The following more outstanding conclusions were reached.

1. Of the 1480 children in grammar grades of the Catholic schools in Montana only 31% reach the norm for their age.
2. About three-fifths of the grammar grade children have decided on their life work.
3. Median intelligence scores for the high school students who intend to continue their education are higher than the median intelligence scores of those not intending to do so.
4. Greatest number plan to go to a Liberal Arts College.
5. Nearly three-fourths have decided on an ultimate life occupation.[11]

In this study made by the author 937 juniors enrolled in thirty high schools in Montana are used. The original data were secured in the spring of 1925. Although thesedata may seem to be obsolete the author has followed these students to determine the value of high school intentions. To what extent are high school intentions fulfilled?

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10. Ruth MacFarlane, Intelligence of Indians in Schools of Montana, University of Montana (Thesis, 1926)
11. Mary V. O'Dea, The Intelligence of Children in the Catholic High Schools of Montana, University of Montana (Thesis, 1925).

CHAPTER I

MATERIALS AND METHODS

Materials Used: "The Otis Self-Administering Test of Mental Ability: Higher Examination: Form A" was given to 937 high school juniors. Seventy-five items constitute the Otis test which are given in a single list. The tests were given by the various high school principals and superintendents according to the directions in the manual accompanying the test. The mental test was supplemented by a questionnaire, a copy of which is appended to this study. The questionnaire consisted of twenty-five questions to be answered by the pupil and an additional nine questions to be filled out by the principal. Due to some unreliable answers, not all of the information asked for has been worked up in this study. A follow-up questionnaire was sent to the present principals in the same schools formerly used. The names of the students were given in the first column of the questionnaire concerning whom the principals were asked to answer the following questions: (A copy is appended).

1. Did this student graduate from high school?
2. Did this student go on to school?
3. If he went on to school, what school did he attend? (Under the column thus headed, the hospital attended for nurses training, the mechanical school, trade

school, business college, etc. were included)

4. If he went on to school, did he graduate from the school?

5. What occupation is this student now following?

6. Give any other information concerning this student which would add to or clarify the preceding information. (Much very valuable information was given here which served as a check on the preceding information.)

Methods of Giving the Tests: During the month of April and May 1925, Dr. Daughters and Dr. Ames jointly conducted the investigation of the Montana secondary pupils. At the same time Dr. Daughters also investigated the students in the seventh and eighth grades. These men sent the test blanks and questionnaire from the School of Education of the State University of Montana to the principal or superintendent who, in response to a previous letter, had indicated his willingness to cooperate by giving the tests. The tests were accompanied by a manual and full direction for administering the tests. The nature of the Otis Self-Administering Test is such that all the information the student needs is given on the first page of the examination booklet. The examiner, in this case the principal or superintendent, had merely to distribute the examination blanks, see that all the students understood the printed directions on the first page, and give the signal to begin. After the tests were given, they were

mailed to Dr. Daughters at the State University.

All of the mental tests were scored by Dr. Ames. He charted the results of the mental tests for each school and sent a copy to the principal or superintendent for his school.

Scope of the Survey: This survey movement involved testing in over forty high schools of the state and in about the same number of grade schools. Miss (Sister) O'Dea's study of the students in the Catholic schools of the state and Miss MacFarlane's study of the Indians in Montana schools were a part of this movement. Mr. Ames worked up the seniors as previously stated. Mrs. Brennan has been working on the material concerning the seventh and eighth grade students. Mr. Hoffstetter has been working on students in Industrial schools. The author chose to study the juniors and try to discover the extent to which desires or intentions are fulfilled. Thirty high schools of the state gave the tests and questionnaire to their junior classes, which varied in size from 3 to 235. There were in these high schools a total of 937 junior students who took the examination--524 girls and 413 boys. Table I shows the number of high schools that participated, the number of juniors from each school in this study, the size of the town or city in which the high schools are located, and the classification of these schools to be used in this study.

TABLE I

THE SCHOOLS, NUMBER OF JUNIORS, SIZE AND CLASSIFICATION OF THE HIGH SCHOOLS INCLUDED IN THIS STUDY

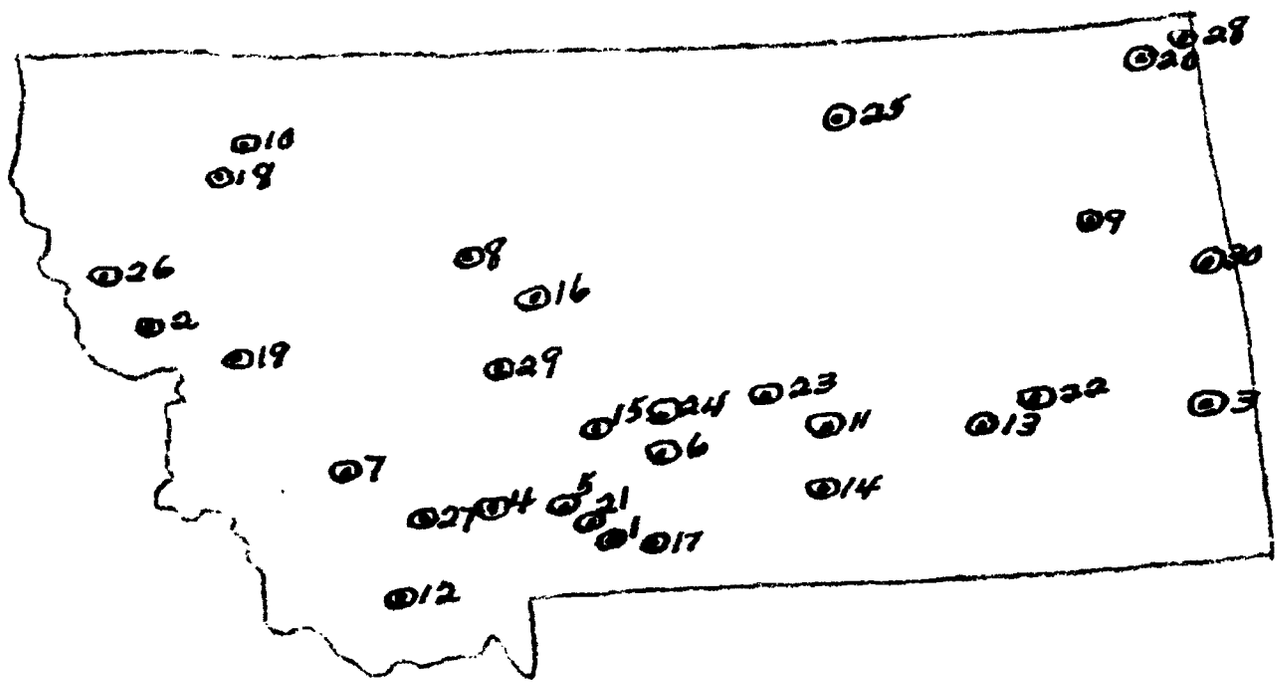
School	No. of Jrs.	Size of Town or City [12]	General Classification Used [13]
Absarokee	12	105	Rural-B
Alberton	8	Less than 100	Rural-C
Baker	15	1,067	Rural-A
Belgrade	21	499	Rural-B
Big Timber	31	1,282	Rural-A
Broadview	13	191	Rural-B
Butte	235	41,611	City
Cascade	8	465	Rural-B
Circle	16	Less than 100	Rural-C
Columbia Falls	11	611	Rural-B
Custer	6	262	Rural-B
Dillon	54	2,701	City
Forsyth	22	1,838	Rural-A
Hardin	33	1,312	Rural-A
Hedgesville	3	Less than 100	Rural-C
Hobson	9	Less than 100	Rural-C
Joliet	7	440	Rural-B
Kalispell	138	12,668	City
Plentywood	20	888	Rural-B
Reedpoint	3	Less than 100	Rural-C
Rosebud	17	Less than 100	Rural-C
Roundup	49	2,434	Rural-A
Ryegate	5	405	Rural-B
Saco	9	425	Rural-B
St. Regis	4	367	Rural-B
Twin Bridges	8	753	Rural-B
Westby	9	253	Rural-B
White Sulphur Springs	14	574	Rural-B
Wibaux	19	611	Rural-B
	937		

12. The New International Atlas of the World (Latest Federal Census Edition) The Geographical Publishing Co. (Chicago, 1929) p. XI
13. Rural-C 100 Population and below: Rural-B 100-1000; Rural-A 1000-2500; City 2500 and above.

The following map shows the distribution over the state of the thirty high schools included in this study.

MAP I

DISTRIBUTION OF THE THIRTY HIGH SCHOOLS IN MONTANA



1. Absarokee
2. Alberton
3. Baker
4. Belgrade
5. Big Timber
6. Broadview
7. Butte
8. Cascade
9. Circle
10. Columbia Falls
11. Custer
12. Dillon
13. Forsyth
14. Hardin
15. Hedgesville
16. Hobson
17. Joliet
18. Kalispell
19. Missoula
20. Plentywood
21. Reedpoint
22. Rosebud
23. Roundup
24. Ryegate
25. Saco
26. St. Regis
27. Twin Bridges
28. Westby
29. White Sulphur Springs
30. Wibaux

CHAPTER II

INTELLIGENCE BY SEX, SIZE OF SCHOOL, AND AGE OF JUNIORS

This chapter will summarize the general intelligence of Montana high school juniors by sex, age, and the size of the school.

Intelligence by Sex: Table II given below will show the median I.Q. by sex and the range of the scores.

TABLE II

I.Q. RATINGS OF MONTANA JUNIORS

(937 cases; 524 girls-413 boys)

Sex	Lowest I.Q. Score	Median I.Q. Score	Highest I.Q. Score
Boys	72	105.24	133
Girls	75	103.97	132
Both Sexes	72	104.54	133

The median I.Q. for the girls and boys in Montana show that the native ability of the boys is superior to that of the girls. This is entirely in agreement with the findings in similar surveys. The boys had a 1.27 higher median I.Q. than the girls. Although the boys had a higher median I.Q. they also had a greater range of mental ability than the girls. The girl with the lowest score was three points superior to the lowest boy. The most superior boy was only one point

superior to the girl with the highest score. This relation between the scores of the boys and girls is more clearly shown in Percentile Graph I.

Table III shows the comparison between the median I.Q. of the juniors in Montana by sexes and the median I.Q. of the seniors in Illinois. The Table indicated that the Montana junior was slightly superior to the Illinois senior.

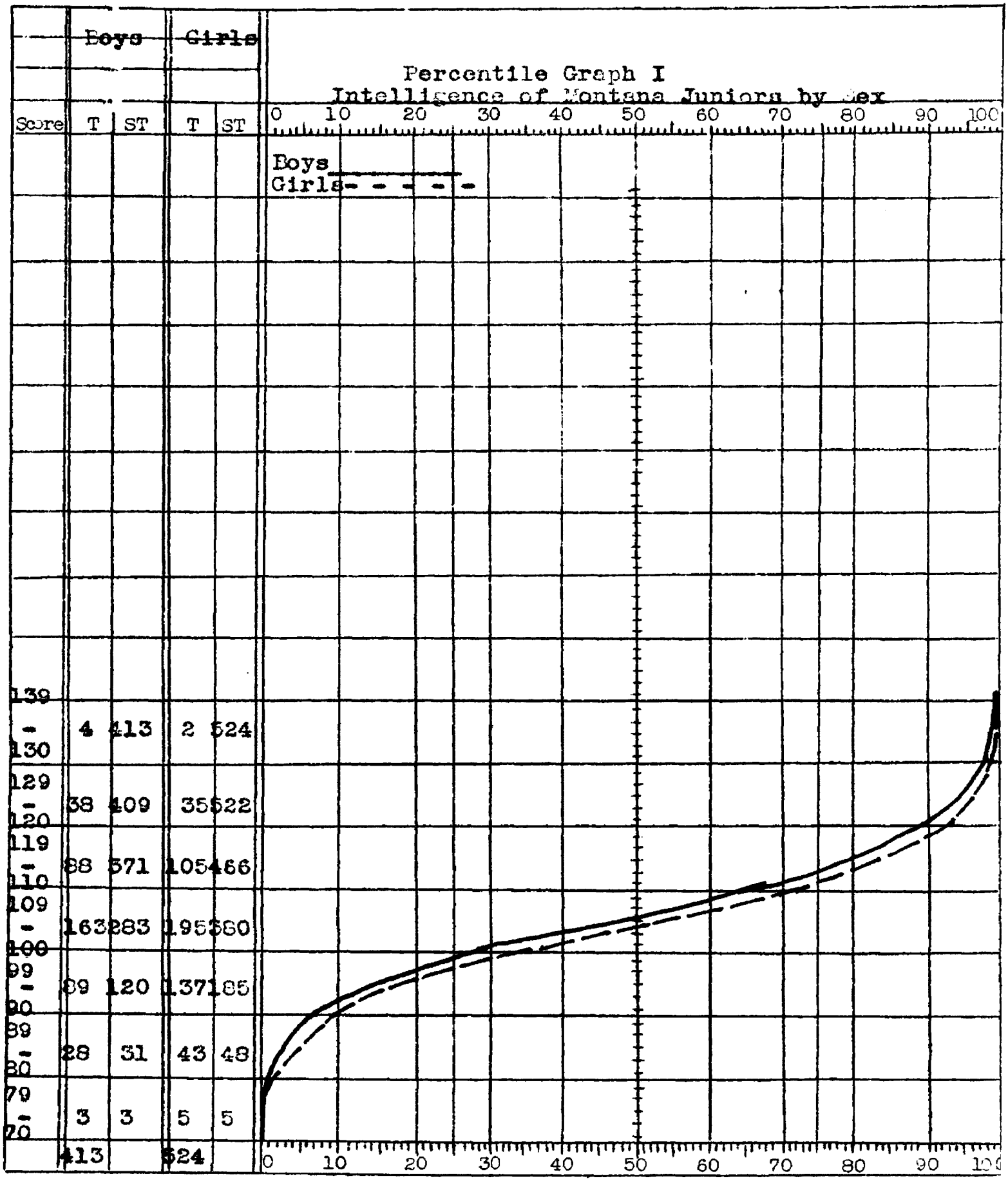
TABLE III

INTELLIGENCE OF MONTANA JUNIORS AND ILLINOIS SENIORS COMPARED

	Median I.Q.	
Sex	ILLINOIS Seniors	MONTANA Juniors
Boys	105	105.24
Girls	103	103.97
Both Sexes	104	104.54

Although both sexes in Montana were superior to both sexes in Illinois, the girls in Montana were more superior to the girls in Illinois than the boys in Montana were superior to the boys in Illinois. Therefore the boys and girls in Montana were more alike than the boys and girls in Illinois.

Intelligence and the Size of the School: Table IV presents the intelligence of Montana juniors according to the size of the town or city in which the school was located.



Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	4	413	2	524
129 - 120	38	409	35	522
119 - 110	88	371	105	466
109 - 100	163	283	195	360
99 - 90	89	120	137	165
89 - 80	28	31	43	48
79 - 70	3	3	5	5
	413		524	

TABLE IV

INTELLIGENCE ACCORDING TO THE SIZE OF THE SCHOOL

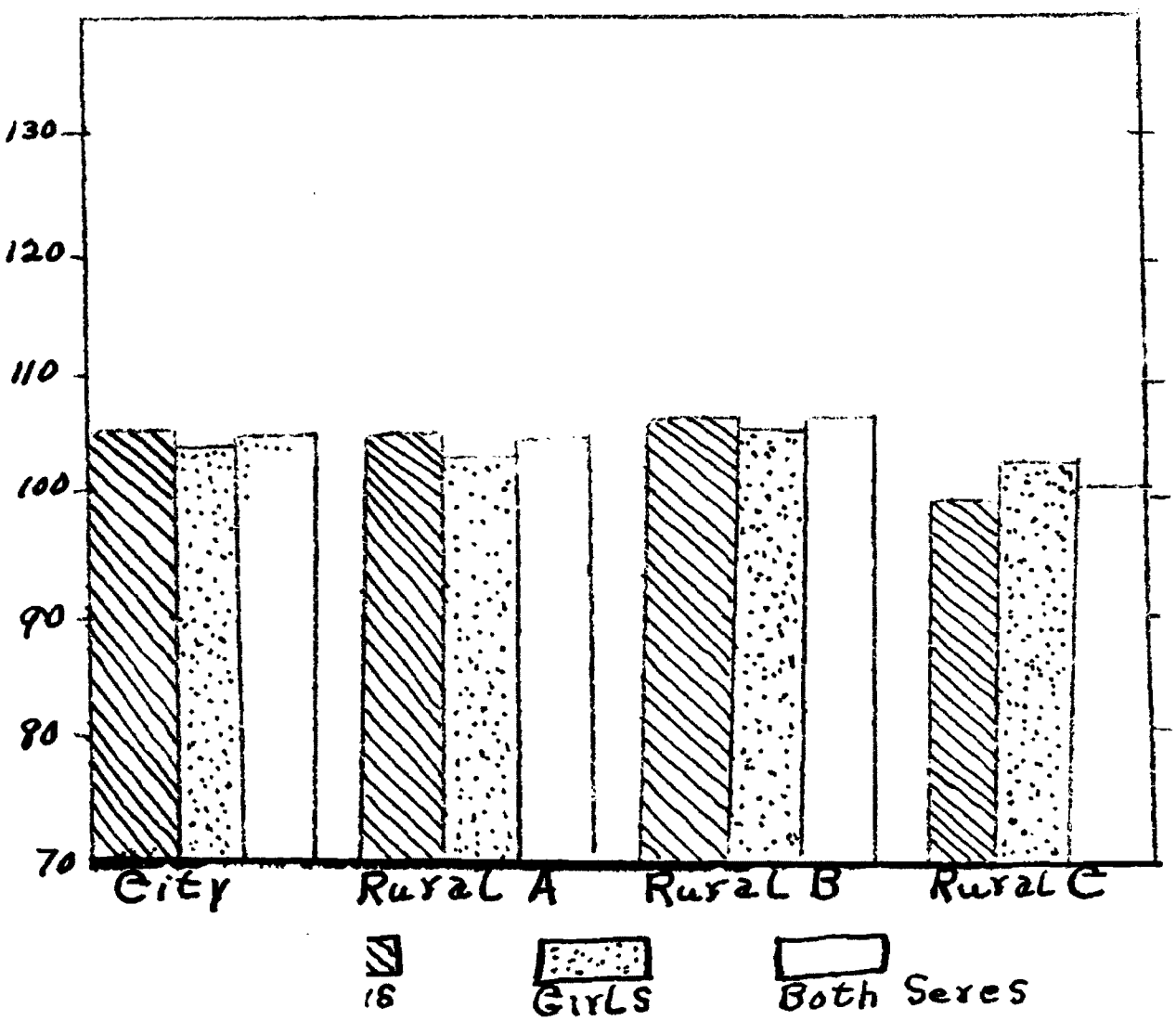
Size of School	Median I.Q. Boys	Girls	Both Sexes
City	105.48	104.03	104.68
Rural-A	104.08	103.38	104.02
Rural-B	105.21	104.45	104.78
Rural-C	98.63	102.08	102.28

This table shows that the boys were superior to the girls except in the smaller high schools. Here the girls were considerably superior to the boys. The students in the medium sized high school or in Class Rural-B had the best native mental capacity, and the students in the city sized high schools ran a close second. The poorest, or those students with the most inferior Median I.Q., were found in those high schools located in towns of less than one hundred population. This is probably due to the fact that the more accessible education becomes, the more the inferior types of students are attracted. Some of the causes for the retention of the poorer student in the smallest schools were: less competition because of fewer students; less money to run the school so that the standards are very low; less ably trained teachers because the salary offered and the living conditions do not attract the better ones. Compulsory education and the increased number of

schools has made the problem of individual differences a major problem today. The girls in all probability were superior to the boys in the smallest high schools since the course was so narrow and unadapted to the interests and tastes of the boys that the more intelligent boys were not attracted. The girls and boys were more alike in the schools in class Rural-B, also. The facts given in Table IV are given in diagrammatic form in Chart I.

CHART I

INTELLIGENCE AND THE SIZE OF SCHOOL



Relationship Between Intelligence and Age: The students were asked in the questionnaire to give their age in years and months. A check could be made on the accuracy of their statements since they were asked to give the date of their birth on the first page of the Mental Test. Table V gives the Median I.Q. and median age for each school in this study.

TABLE V

MEDIAN INTELLIGENCE AND AGE BY SCHOOLS FOR THE JUNIORS

School	Median I.Q.	Median Age	Cases
Absarokee	97.00	17.12	12
Alberton	90.00	17.58	8
Baker	103.57	17.00	15
Belgrade	106.88	16.86	21
Big Timber	104.64	17.68	31
Broadview	100.83	17.50	13
Butte	107.95	16.85	235
Cascade	105.83	16.62	8
Circle	102.92	17.75	16
Columbia Falls	110.00	16.86	11
Custer	100.00	18.50	6
Dillon	107.38	17.69	54
Forsyth	105.83	17.50	27
Hardin	102.81	17.06	33
Hedgesville	92.50	18.00	3
Hobson	110.00	17.50	9
Joliet	98.33	17.50	7
Kalispell	105.90	17.20	138
Missoula	106.08	16.96	138
Plentywood	110.00	17.00	20
Reed Point	110.00	17.00	3
Rosebud	103.57	17.00	17
Roundup	112.50	17.57	49
Ryegate	105.00	17.08	5
Saco	108.33	18.00	9
St. Regis	113.50	17.50	4
Twin Bridges	106.25	17.00	8

TABLE V (Con't)

School	Median I.Q.	Median Age	Cases
Westby	111.66	17.50	9
White Sulphur Springs	106.25	17.12	14
Wibaux	100.71	17.12	19
	104.54	17.28	937

Eleven of the thirty high schools had a median I.Q. below the median of all the schools. Sixteen of the schools had a median age lower than the median age for all the schools. Two thirds of these schools that had a median age below the state median age, had a median I.Q. above the median I.Q. for all the schools. Almost one-half (43%) of those older than the median had an I.Q. below the total median I.Q. There was therefore a positive relation between "young-ness" and superior mental ability. This relationship is shown more clearly in Table VI.

TABLE VI

MEDIAN I.Q. OF JUNIORS AT VARIOUS AGE LEVELS

Age	Median I.Q. Girls	Cases	Boys	Cases	Cases
13-6 - 14-0	125	1			1
14-0 - 14-6			122.5	2	2
14-6 - 15-0	115	1	110.00	4	5
15-0 - 15-6	113	11	111.25	13	24
15-6 - 16-0	111.16	40	110.00	35	75
16-0 - 16-6	105.37	75	109.19	44	119

TABLE VI (Con't)

Age	Median I.Q. Girls	Cases	Boys	Cases	Cases
16-6 - 17-0	105.09	119	108.93	80	199
17-0 - 17-6	101.53	110	103.96	66	176
17-6 - 18-0	99.42	64	102.74	72	136
18-0 - 18-6	101.14	53	100.00	33	86
18-6 - 19-0	101.38	20	102.50	31	51
19-0 - 19-6	103.37	17	95.00	8	25
19-6 - 20-0	102.50	3	101.25	11	14
20-0 - 20-6	95.00	3	97.50	5	8
20-6 - 21-0	97.00	5	92.50	3	8
21-0 - 21-6	105.00	1			1
21-6 - 22-0			102.50	4	4
22-0 - 22-6			95.00	2	2
22-6 - 23-0	105.00	1			1
	103.97	524	105.24	413	937

Although earlier in this chapter it has been shown that the boys represented the greatest range of ability according to age, the youngest junior was a girl who had the highest median. The girl is also the oldest. The oldest girl with the median I.Q. of 105.00 was a junior with good average mental ability. In Montana lack of finances and a sparse population has made the schools far apart and not easily accessible to many students. The educational opportunities of this girl undoubtedly had been far from ideal.

The boys had the lowest median I.Q. according to ages. The boys from "20-6 - 21-0" were the least endowed mentally.

Summary: According to median scores the boys were more brilliant than the girls. The girls had a higher median I.Q.

than the boys in those schools located in towns with a population less than 100. The boys represented a larger range in mental ability or were less homogeneous than the girls. The Montana juniors compared very favorably with the Illinois seniors in native mental endowment. The students enrolled in the medium sized high schools had the highest median I.Q.. In general, the younger the student is in relation to his accomplishment the more superior intellect will he have.

CHAPTER III

INTELLIGENCE IN RELATION TO COURSE AND SUBJECTS LIKED AND DISLIKED

Course Pursued: Every student was asked to give the course he was taking in high school. The boys were found in eleven different courses. It must be remembered throughout that the courses are not standardized in Montana. Therefore a student taking a certain course in one school might have been taking another course if he had been enrolled in a different school. The students oftentimes do not know the course they are pursuing. This is known to be true for in some cases, the principal, going over the questionnaire, corrected the error made by the student. There might have been cases that were overlooked by the principals. This confusion is largely due to: first, the lack of standardization; second, the core of subjects remaining the same but the electives being different. The college preparatory, academic and liberal arts courses must have been the same courses. The classical course had the same core of subjects that were required in all other courses but the electives had emphasized the languages or mathematics. The scientific course had the sciences emphasized in the electives permitted the students. Table VII shows the courses mentioned by the students, the number of boys taking the course and the per cent of the boys taking the course.

TABLE VIII

PERCENTAGE OF BOYS TAKING VARIOUS COURSES OFFERED

	Lib. Arts	Mixed	Com'l	Gen'l	Coll. Prep.	Scien-tific	Class-ical	Man. Arts	Agri.	Voca-tional		ech.
Cases	8	6	54	205	1	82	18	35	4	1		1
%	1.94	1.45	13.07	49.64	.24	19.86	4.36	7.99	.97	.24		.24

One-half of the boys were enrolled in the General Course. One-fifth of the boys are taking a scientific course in high school--a fraction which might have been considerably larger if this course had been offered in more high schools. Only seven high schools offered the scientific course. Of the seven schools offering both the general and scientific courses the boys were taking the general course in 53.20 per cent. of the cases and the scientific course in 31.66 per cent. Thus, in all probability more would have been taking the scientific course and fewer the general course, if both courses had been open to the students in all the schools. When the number of boys taking the various courses in Montana was compared with the number of boys taking the same courses in Massachusetts, there was considerable disagreement. This disagreement was doubtless due to the fact that Montana had such a large number of small high schools that only offered one or two courses. Table VIII shows the comparison between the findings of Colvin and MacPhail in Massachusetts with Seniors and the results of this study.

TABLE VIII

PERCENTAGE OF STUDENTS TAKING CERTAIN COURSES IN MASSACHUSETTS AND MONTANA

Course	Per cent of cases (Boys) Massachusetts Seniors	Montana Juniors
Commercial	17	13.07
College Preparatory	33	.24
General	15	49.64
Scientific	19	19.86
Vocational	13	.24
Classical	2	4.36
Academic	1	
Liberal Arts		1.94

Table IX gives the courses and the percentage enrolled in each for the girls. Almost one-half of the girls were enrolled in the general course. The girls were divided among nine courses. Practically twice as many girls as boys are taking the commercial course. Sixty-six per cent more boys than girls were taking the scientific course. Since the boys preferred the scientific course but only the larger schools offered it, the low median I.Q. for boys in the smallest type of schools indicates that the superior boys were not attracted by the course offered. Table X shows the percentage of Montana Junior

girls and Massachusetts senior girls taking the various courses offered. The table shows that Massachusetts in terms of percentages had a little more than twice as many girls taking the commercial course as Montana had.

TABLE IX

PERCENTAGE OF GIRLS TAKING VARIOUS COURSES OFFERED

	Gen'l	Mixed	Com'l	Lib. Arts	Class.	Scient.	Norm.	H.E.	Man. Tr.
Cases	231	7	118	1	63	36	52	14	2
%	44.08	1.34	22.52	.20	12.02	6.87	9.92	2.67	.38

TABLE X

PERCENTAGE OF GIRLS ENROLLED IN VARIOUS COURSES IN MASSACHUSETTS AND MONTANA

Course	Per cent of cases (Girls) Massachusetts Seniors	Montana Juniors
Commercial	57	22.52
College Preparatory	16	
General	13	44.08
Scientific	1	6.87
Vocational	2	3.05
Normal Preparatory	8	9.92
Classical	2	12.02
Academic	1	
Liberal Arts		.20

Nearly one-half (44.08%) of the girls in Montana were taking the general course while approximately one-eighth (13%) of the

girls in Massachusetts were taking the General Course. This is accounted for by the fact that Montana had so many high schools offering only a general course.

Table XI gives the courses and the median I.Q. by sex for the Montana juniors. Those students taking the classical and

TABLE XI

INTELLIGENCE BY SEXES OF JUNIORS IN VARIOUS COURSES

Course	Boys	Girls	Both Sexes
General	105.07	103.89	104.39
Classical	115	109.12	111.52
Scientific	106.54	106.78	106.69
Liberal Arts	103	115	105
Commercial	101.25	101.25	101.25
Manual Arts	100		100
Normal Training		105.47	105.47
College Preparatory	85		85
Mechanical	85		85
Other Vocational	85		85
Mixed	110	112.50	111.50
Agricultural	106.50		106.50
Home Economics		100	100

mixed courses had a higher median I.Q. than those students in any other course. The median I.Q. for both sexes in seven courses was higher than the state median for all students in all courses. Those courses in which the best students, according to median I.Q., were enrolled, were the general, classical, scientific, liberal arts, normal training, agriculture, and the mixed courses. The median I.Q. for the students pursuing these courses was above the state median of 104.54. In all

the other courses the students had a median I.Q. below the state median of 104.54. Table XI shows that the students in the various vocational type courses such as commercial, mechanical, vocational and agricultural courses had a median I.Q. much inferior to the median I.Q. of those students in the classical and scientific courses. It seems therefore that the vocational subjects were attracting the less able student. Naturally there were exceptions. Percentile Graph II compares the intelligence of juniors in scientific and commercial courses by sexes.

Subjects Liked: The students were asked to name the two subjects they liked best. One thousand seven hundred and ninety-five choices were made. Table XII shows the number of choices and the percentages of those students liking the various subjects.

TABLE XII

PERCENTAGES OF JUNIORS LIKING HIGH SCHOOL SUBJECTS

Subjects	Boys		Girls		Total	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
English	98	12.25	233	23.42	331	18.44
Mathematics	161	20.13	120	12.06	281	15.11
Social Sciences	140	17.50	123	12.36	267	14.99
Languages	36	4.50	84	8.45	120	6.69
Sciences	163	20.38	96	9.65	259	14.45
Commercial Subjects	110	13.75	218	21.91	328	18.29
Agriculture	13	1.63			13	.74
Home Economics			50	5.03	50	5.03
Mechanical Drawing	31	3.88			31	1.75
Manual Training	18	2.25			18	1.02

TABLE XII 'Con't)

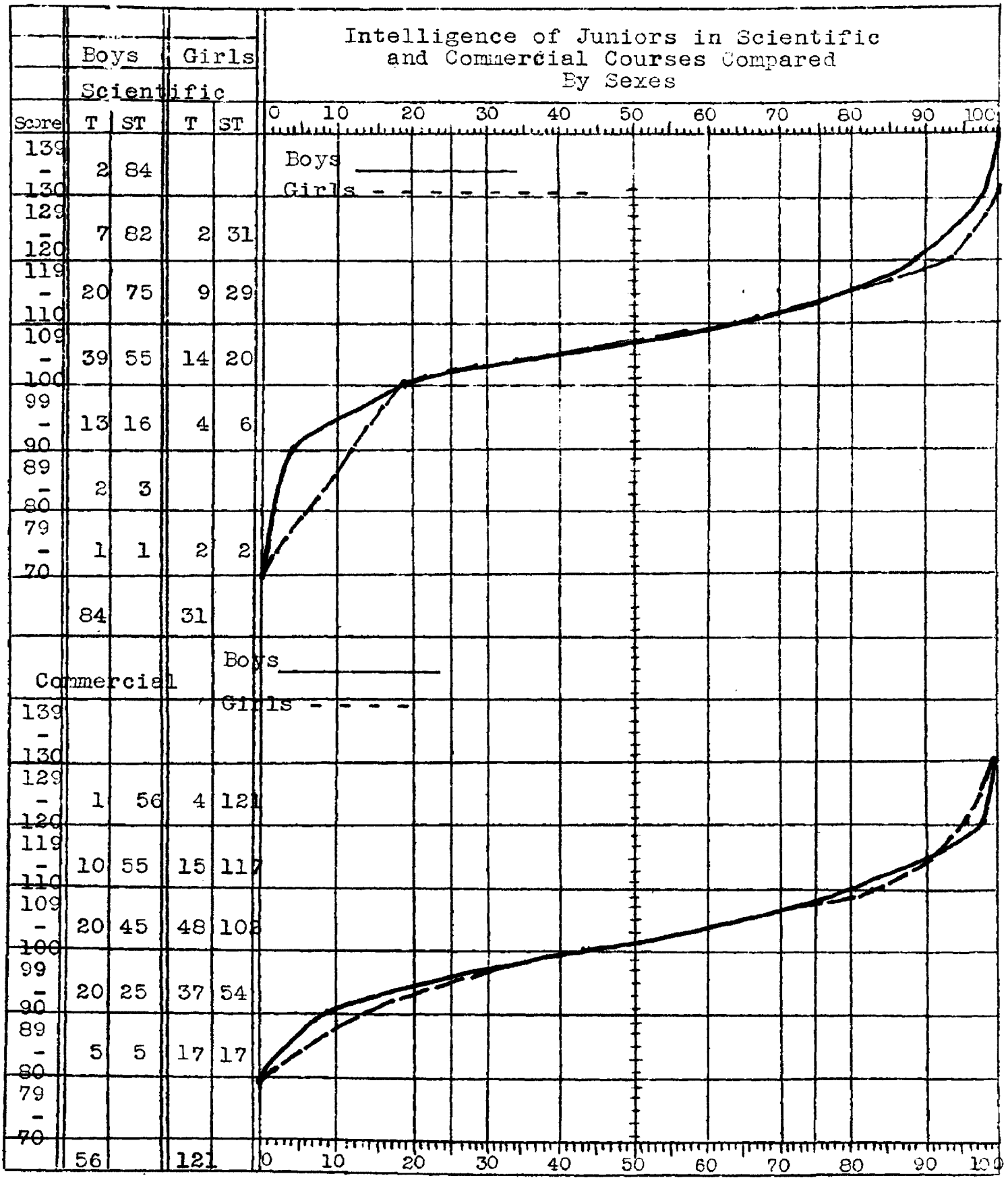
PERCENTAGES OF JUNIOR LIMIT HIGH SCHOOL SUBJECTS

Subjects	Boys		Girls		Total	
	Cases	PerCent	Cases	PerCent	Cases	PerCent
Journalism	2	.25	4	.40	6	.35
Public Speaking	3	.37	7	.70	10	.57
Spelling	9	1.12	22	2.21	31	1.75
Music	4	.50	10	1.00	14	.79
Art	11	1.37	5	.50	16	.90
Debate	1	.12			1	.06
Normal Training			23	2.31	23	1.29
					1795	100.00

More boys preferred sciences to any other subject. Mathematics was a second close favorite of the boys. The girls preferred English and Commercial subjects. The six subjects liked best by the boys and the six liked best by the girls were the same subjects but the order of likes according to percentages was somewhat changed. The six subjects preferred by the boys, and ranked according to the frequency of choice were: sciences, mathematics, social sciences, commercial subjects, English and languages. The six subjects liked best by the girls in order of frequency of preference were: English, commercial subjects, social sciences, mathematics, sciences and languages. The social sciences were given third place by both the boys and girls. Languages were the least well-liked by both sexes in the first six choices.

Table XIII gives the median I.Q. of the juniors who liked the various subjects.

PERCENTILE GRAPH II



Score	Boys T	Boys ST	Girls T	Girls ST
Scientific				
139 - 130	2	84		
129 - 120	7	82	2	31
119 - 110	20	75	9	29
109 - 100	39	55	14	20
99 - 90	13	16	4	6
89 - 80	2	3		
79 - 70	1	1	2	2
	84		31	
Commercial				
139 - 130				
129 - 120	1	56	4	121
119 - 110	10	55	15	117
109 - 100	20	45	48	102
99 - 90	20	25	37	54
89 - 80	5	5	17	17
79 - 70				
	56		121	

TABLE XIII

INTELLIGENCE OF JUNIORS ACCORDING TO FAVORITE STUDIES

Subjects	Median I.Q. Boys	Girls	Both
English	103.69	103.70	103.69
Mathematics	107.20	109.05	107.35
Social Sciences	104.56	104.36	104.50
Sciences	107.45	105.55	105.68
Languages	108.62	106.32	107.09
Com'l Subjects	103.28	102.38	102.50
Agriculture	105.83		105.83
Home Economics		101.07	101.07
Mechanical Drawing	104.09		104.09
Manual Training	100.77		100.77
Norman Training		103.88	103.88
Journalism	110.00	115.00	113.33
Public Speaking	105.00	100.00	102.50
Spelling	106.87	106.33	106.74
Music	92.50	99.00	96.36
Art	103.33	105.00	104.15
Debate	105.00		105.00

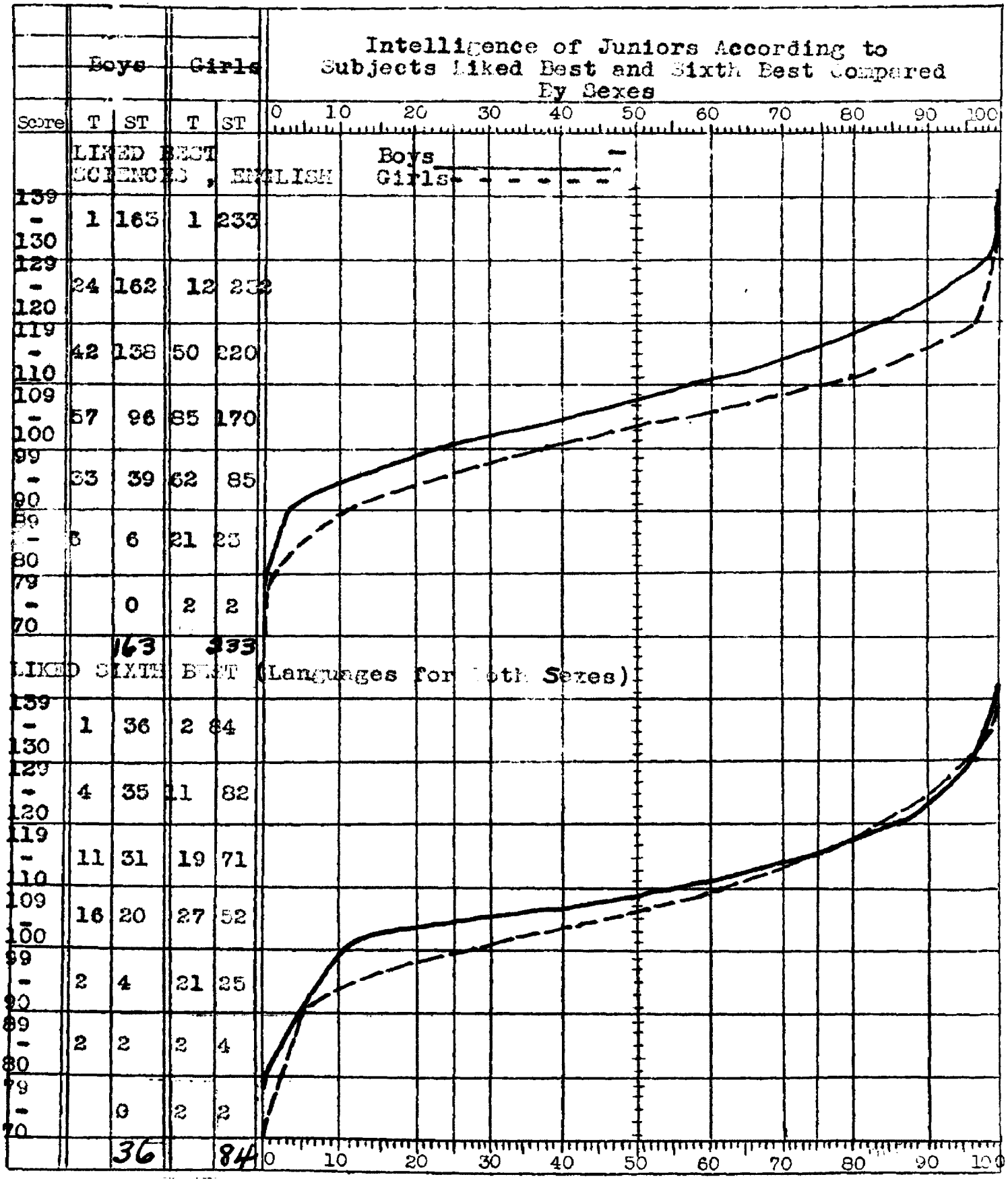
As shown by the median I.Q. in Table XIII the girls liking mathematics and the boys liking languages were superior to the students who liked any of the other subjects. The students who liked music had the lowest median I.Q. This is no doubt due to the face that music was not taught as a regular subject in the high schools of Montana but only as an extra-curricular activity. The students who preferred music probably found it very difficult to get along in their regular school work and so they turned to that activity in which they appeared more favorably.

Percentile Graph III Compares the subjects liked best and sixth best by sexes.

If the six subjects liked according to frequency of choice were ranked according to the mental ability of the students preferring the subjects as indicated by the median I.Q., there would be considerable change. The order for the boys would become; Languages, sciences, mathematics, social sciences, English and commercial subjects. The order of the subjects liked by the girls would become: mathematics, languages, social sciences, sciences, English and commercial subjects. It is to be noted that both the boys and girls who preferred English and commercial subjects had the lowest median I.Q. among the six subjects liked best.

Subjects Disliked: Each student was asked to name the subjects he liked least. One thousand seven hundred and ninety-one dislikes were given. Table XIV gives the percentage of the juniors who disliked the various high school subjects.

PERCENTILE GRAPH III



Score	Boys T	Boys ST	Girls T	Girls ST
	LIKED BEST SCIENCES, ENGLISH			
139 - 130	1	163	1	233
129 - 120	24	162	12	232
119 - 110	42	138	50	220
109 - 100	57	96	85	170
99 - 90	33	39	62	85
89 - 80	5	6	21	23
79 - 70		0	2	2
		163		233
	LIKED SIXTH BEST (Languages for both Sexes)			
139 - 130	1	36	2	84
129 - 120	4	35	11	82
119 - 110	11	31	19	71
109 - 100	16	20	27	52
99 - 90	2	4	21	25
89 - 80	2	2	2	4
79 - 70		0	2	2
		36		84

TABLE XIV

PERCENTAGES OF JUNIORS DISLIKING THE VARIOUS SUBJECTS

Subjects	Boys		Girls		Total	
	Cases	PerCent	Cases	PerCent	Cases	PerCent
Languages	92	11.21	119	12.25	211	11.78
Com'l Subjects	34	4.14	72	7.42	106	5.92
Spelling	27	3.42	26	2.68	53	2.95
Social Science	179	21.63	214	22.04	393	21.94
Sciences	76	9.15	94	9.68	170	9.49
Mathematics	146	17.81	270	27.82	416	23.23
English	241	29.39	140	14.42	381	21.28
Public Speaking	2	.24	4	.41	6	.34
Penmanship	3	.37	2	.20	5	.28
Vocations	3	.37	1	.10	4	.22
Home Economics			15	1.54	15	.84
Normal Training	3	.37	10	1.03	13	.73
Music			1	.10	1	.05
Mechanical Drawing	2	.24			2	.11
Agriculture	4	.48			4	.22
Manual Training	8	.98	3	.31	11	.62
	820	100.00	971	100.00	1791	100.00

The girls disliked mathematics the most and the boys disliked English the most. The subjects disliked most in the order of frequency were: Boys--English (social sciences), mathematics, languages, sciences, and commercial subjects: Girls--mathematics, social sciences, English, languages, sciences and commercial subjects. Four of the six subjects were given the same rank by both the boys and girls. Table XV gives the median I.Q. of the students who disliked certain high school subjects. Nearly every subject liked by some students was also disliked by other students. Percentile Graph IV compared the subjects disliked most and sixth compared by sexes.

TABLE XV

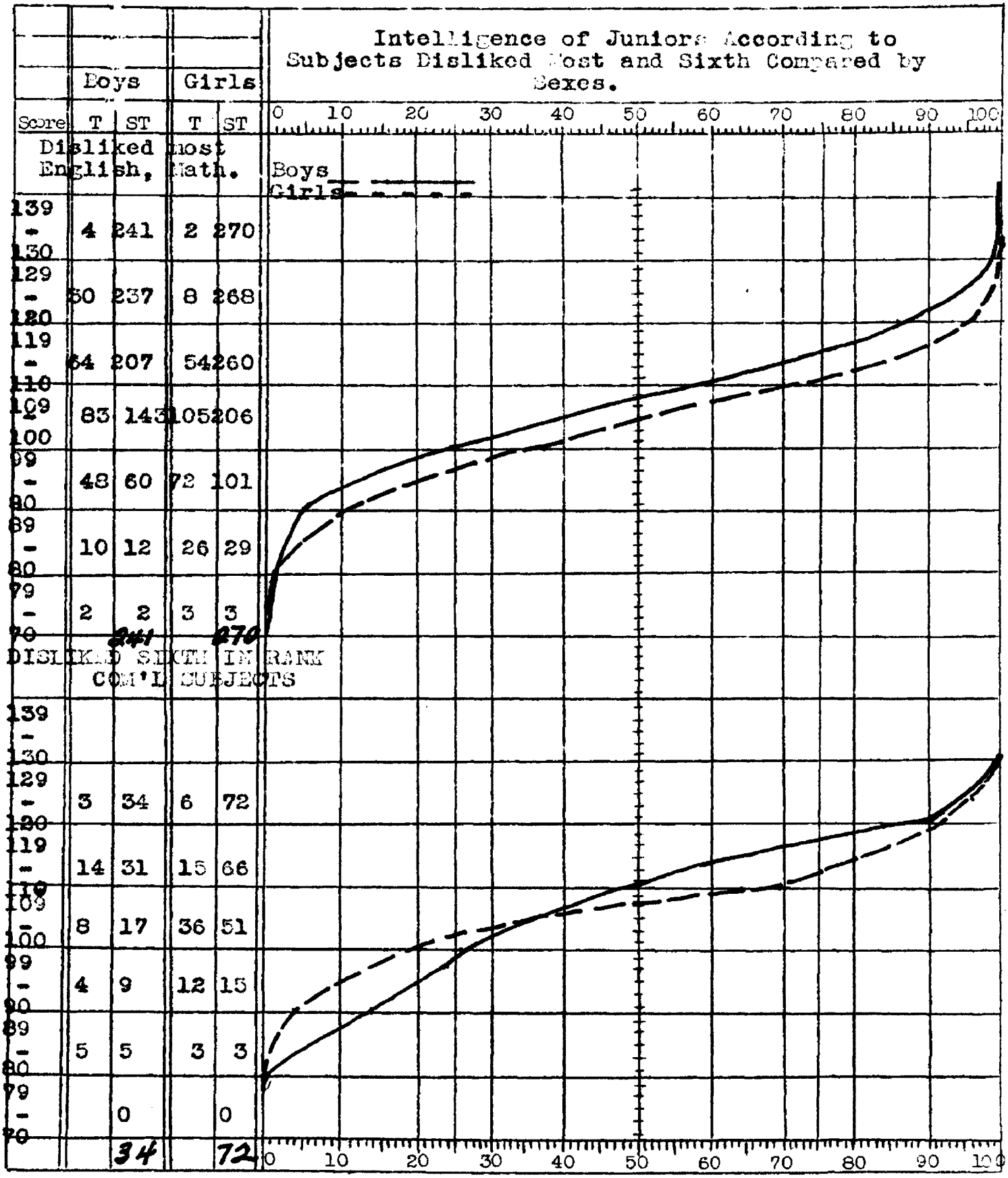
INTELLIGENCE OF JUNIORS ACCORDING TO SUBJECTS DISLIKED

Subjects	Median I.Q. Boys	Girls	Both Sexes
Languages	104.67	105.93	105.26
Com'l Subjects	109.37	105.69	106.91
English	107.25	103.07	106.29
Mathematics	103.05	103.06	103.05
Sciences	105.69	105.54	105.68
Social Sciences	106.01	103.17	104.23
Mech. Drawing	102.50		102.50
Home Economics		106.43	106.43
Agriculture	101.66		101.66
Man. Training	103.75	107.50	105.83
Normal Training	105.00	103.00	104.16
Vocational	102.50	125.00	102.50
Public Speaking	105.00	102.50	102.50
Penmanship	102.50	114.50	102.50
Music		95.00	95.00
Spelling	112.79	101.72	106.79

When the subjects disliked were ranked according to the median I. ., the order was practically reversed. For the boys the order of the six most disliked subjects became; commercial subjects, English, social sciences, languages, mathematics. The order for the girls was changed to: languages, commercial subjects, sciences, (social sciences) English, and mathematics.

Summary: The general course was the most commonly offered. Almost one-half (46.86%) of the Montana juniors were taking the general course. The students enrolled in the classical and mixed courses had the best native mental ability. The students enrolled in the general course rank seventh according to their median I.Q.. The students in the various vocational

PERCENTILE GRAPH IV



Score	Boys T	Boys ST	Girls T	Girls ST
	Disliked most English,		Math.	
139 - 130	4	241	2	270
129 - 120	50	237	8	268
119 - 110	64	207	54	260
109 - 100	83	143	105	206
99 - 90	48	60	72	101
89 - 80	10	12	26	29
79 - 70	2	2	3	3
		241		270
	DISLIKED SIXTH IN RANK COM'L SUBJECTS			
139 - 130				
129 - 120	3	34	6	72
119 - 110	14	31	15	66
109 - 100	8	17	36	51
99 - 90	4	9	12	15
89 - 80	5	5	3	3
79 - 70		0		0
		34		72

courses including the commercial commercial courses have the lowest median I.Q.. The vocational courses had attracted students of less ability to enter the high school.

The boys preferred sciences and mathematics. According to the median I.Q. in their favorite subjects the boys taking languages and sciences were the most superior students. The girls liked English and the commercial subjects the most. Their median I.Q. shows that the girls taking mathematics and languages were superior to the girls taking any other subject.

Practically every subject liked by some students was also disliked by other students. The boys disliked English and the social sciences the most. The girls liked least mathematics, and social sciences. When the median I.Q. for the students in the various disliked subjects was consulted, the boys had made the highest median in commercial subjects and English. The most superior girls disliking subjects were found in the languages and commercial subjects.

CHAPTER IV

INTELLIGENCE AND HIGH SCHOOL GRADUATION INTENTIONS

Planning to Graduate: All but twenty-five of the 937 juniors were planning to graduate from high school. All of the group who were planning to graduate, were planning to do so in 1926, the normal year for their completion. Therefore it seems that the majority of the dull, uninterested students had been eliminated prior to their junior year in high school. Since this survey was made in April and May of the junior year perhaps many of the poorer junior students had already been eliminated. However, at this time twenty-five were planning to leave school. Table XVI shows the number of students planning to graduate and their median I.Q., and, also the number of juniors not planning to graduate and their median I.Q.

TABLE XVI

INTELLIGENCE OF JUNIORS PLANNING AND NOT PLANNING TO GRADUATE FROM HIGH SCHOOL

	Planning to Graduate		Not Planning to Graduate	
	Cases	Median I.Q.	Cases	Median I.Q.
Boys	399	106.34	14	97.50
Girls	513	104.07	11	99.00
Both Sexes	912	105.32	25	98.60

It is interesting to study a little more closely these

students not planning to graduate. In twenty of the high schools all of the students were planning to graduate. These twenty-five students were found in the other one-third of the schools. Table XVII shows the number of high schools in each class in which all the juniors enrolled were planning to complete their high school course.

TABLE XVII

DISTRIBUTION OF STUDENTS PLANNING TO GRADUATE BY SCHOOLS

	Rural-A	Rural-B	Rural-C	City
Total No. of Schools	5	15	6	4
Schools in which all students plan to finish	2	12	5	1

The above Table XVII indicates that the juniors in 25 per cent of the schools in the city class were planning to complete the high school course, 40% of the schools in Rural-A, 60% in Rural-B class and over 80% in Rural-C or the smallest high schools. Therefore the larger the school the more academic fatalities were found; the smaller the school the more sure was the student of completing his high school work. Ability was exerting a strong influence. The student with poor native ability could not succeed when he was competing with a large number who were composed of all types of mental ability. Whenever he failed for a time, he became discouraged and dropped

out. In the small high schools there was less competition and more chance for individual help. Thus the poorer student was helped along until he finished or nearly finished his high school course. Table XVIII shows the range in ability and the median I.Q. of those juniors not planning to finish their high school course.

TABLE XVIII

INTELLIGENCE OF JUNIORS NOT EXPECTING TO GRADUATE FROM HIGH SCHOOL

Sex	Lowest I.Q.	Median I.Q.	Highest I.Q.	Cases
Boys	85	97.50	120	14
Girls	88	99.00	111	11
Both Sexes	85	98.60	120	25

The boys not planning to graduate represented the greatest range. However the girls had a less than a two point higher median I.Q. than the boys.

Occupational Intentions of Juniors Not Planning to Graduate:

Each student was asked whether he planned on finishing his high school course, and if not, what he planned to do. Table XIX shows the occupations the twenty-five juniors said they would enter, the number entering each, and the median I.Q. for each occupation.

TABLE XIX

OCCUPATIONAL CHOICES OF JUNIORS NOT PLANNING TO GRADUATE FROM HIGH SCHOOL

	Nurse	Undecided	Music	Mechanic	Steno.	Radio	Hardware
Cases	4	13	1	3	2	1	1
MedianI.Q. 9125	101.00	95.00	105.00	100.00	100.00	95.00	

Table XIX serves to indicate that approximately one-half of the students leaving high school before the completion of their course do not know what they will do. Unprepared for any work they will wait to see what "cards" Dame Fortune will deal them. The other twelve students chose six occupations. It is especially interesting that the six occupations chosen were not in professional fields. They evidently had realized that more preparation and, in some cases, more ability was needed to enter the professions.

Occupation of the Fathers of Juniors Not Planning to graduate: Since those juniors not planning to graduate from high school did not plan to enter the professions when they would quit school, it would shed light to know if any of them came from "profession" homes? Table XX gives the occupation of the parents of the juniors who were planning to leave school, the number of cases and the percent.

TABLE XX

OCCUPATIONAL DISTRIBUTION OF THE FATHERS OF JUNIORS NOT PLANNING TO GRADUATE

	Ranch-er	Not Given	Carp-enter	Gro-cer	Min-er	Lumb.	But-cher	Com. Lal.	Fore-man	Sales-man	Paint-er	Tourist trade
Cases	7	5	2	1	1	2	1	1	1	1	1	1
%	28	20	8	4	4	8	4	4	4	4	4	4

The fathers of the twenty-five students not planning to graduate were engaged in twelve different occupations. Almost thirty per cent were engaged in farming or ranching. In twenty-per cent of the cases the father's occupation was not given; 80% of the parents were found in each of carpentering and lumbering. The other thirty-six per cent were found in nine different occupations none of which would be classed in the professional group. Those students leaving school early were not from the best homes; they were not encouraged to continue; the educational environment of the home was poor or even 'nil"; and the one-fifth of whose fathers were not listed as engaged in some work, perhaps, were from homes where there was irregular employment and income. With such a home environment, whenever school became too disagreeable or a fair job appeared, the students left school.

Summary: Only 2.66 per cent of the juniors did not plan to finish their high school work. All who were planning to

graduate from high school, planned to do so in the following year. Those students not planning to complete their high school course had a median I.Q. 5.94 points below the state median of 104.54 for all students. The girls of this group were superior mentally to the boys. One-half of the students planned to enter the professional field. Not one of the juniors planning to leave school came from a home in which the father was engaged in a profession.

CHAPTER V

INTELLIGENCE AND PLANS IMMEDIATELY AFTER HIGH SCHOOL

Questions nine and ten on the questionnaire requested statements as to plans immediately after graduation from high school. Also, if the students were planning to go to work, the kind of work they intended to do.

Juniors Planning to Go to Work: Four hundred and fourteen students indicated they would go to work immediately upon the completion of their high school course. Table XXI shows the number of boys and girls planning to begin work at once, the per cent of each and the median I.Q. for each.

TABLE XXI

INTELLIGENCE OF JUNIORS PLANNING TO BEGIN WORK AT ONCE

Sex	Cases	Per cent	Median I.Q.
Boys	194	47	104.14
Girls	220	42	101.46

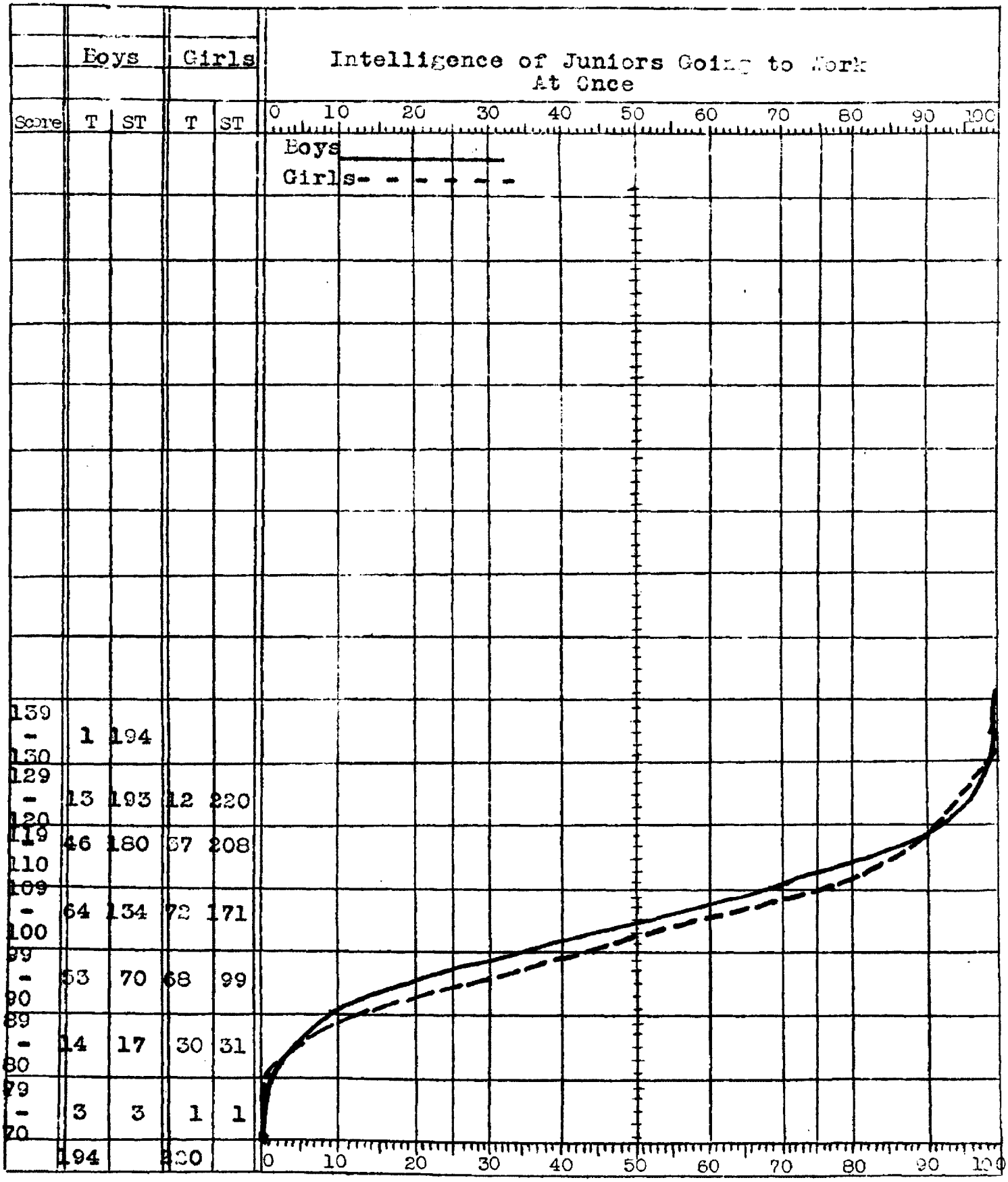
There were five per cent more boys than girls planning to work immediately. The girls planning to work had a median I.Q. 2.51 points lower than the state median for all junior girls. The boys planning to work were 1.10 points below the state median for all boys. A larger percentage of the boys planning to work had higher median I.Q. than the girls who planned to

work. However, some of those students who planned to work immediately, planned to do so only until they could finance themselves through college. This topic is further taken up in Chapter VI.

Percentile Graph IV shows the intelligence of the girls and boys going to work immediately.

Occupational Choices of Students Going to Work: Thirty different occupational choices were made by the 414 students who planned to go to work at once after high school graduation. Table XXII shows the occupation chosen, the number and per cent choosing each occupation.

PERCENTILE GRAPH V



Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	1	194		
129 - 120	13	193	12	220
119 - 110	46	180	67	208
109 - 100	64	134	72	171
99 - 90	53	70	68	99
89 - 80	14	17	30	31
79 - 70	3	3	1	1
	194		220	

TABLE XXII

OCCUPATIONAL DISTRIBUTION OF JUNIORS PLANNING TO WORK IMMEDIATELY

Occupation	Cases	Percent
Undecided	133	32.14
Stenographers	96	23.23
Teaching	69	16.69
Farming & Ranching	32	7.06
Anything	7	1.72
Electrical Work	10	2.44
Nurse	15	3.64
Mechanic _Machinist	13	3.17
Music	12	2.93
Civil Service	2	.51
Housekeeping	2	.51
Salesman	2	.51
Architect	2	.51
Jeweler	1	.26
Librarian	1	.26
Hardwareman	1	.26
Forester	1	.26
Miner	1	.26
Salesgirl	1	.26
Contractor	1	.26
Accountant	1	.26
Street Cleaner	1	.26
Photographer	1	.26
Telephone Operator	1	.26
Navy	1	.26
Printor	1	.26
Journalist	1	.26
Store-keeper	1	.26
Auto Shop Business	1	.26
Teach Dancing	1	.26
Engineer	1	.26
Aviator	1	.26
	414	100.00

Practically one-third (32.14%) of the juniors, who planned to go to work immediately, had not decided what work they would do. Nearly one-fourth (23.23%) wanted to enter the

stenographic field. About one-sixth (16.69%) wanted to enter the teaching profession. All the students planning to teach immediately had had the normal training course in high school. Less than one-tenth desired to become farmers or ranchers. Approximately one-twenty-fifth of the girls were planning to become nurses. Over one-third of this group studied were planning to enter either stenographic work or teaching.

Table XXIII gives the median intelligence score for each occupational class.

TABLE XXIII

INTELLIGENCE OF JUNIOR HIGH SCHOOL PUPILS GOING TO WORK AT [illegible]

Occupations	Median I.Q.		
	Boys	Girls	Both
Undecided	103.66	100.94	102.72
Stenographers	103.00	101.04	101.41
Teaching		104.53	104.53
Farming & Ranching	105.66		105.66
Anything	111.25		111.25
Electrician	111.25	85.00	111.24
Nurse		94.17	94.17
Mech. & Machinist	103.75		103.75
Music	97.00	95.00	95.83
Civil Service	85.00		85.00
Housekeeping		102.50	102.50
Salesman	90.00		90.00
Architect	102.50		102.50
Librarian		105.00	105.00
Jeweler	105.00		105.00
Hardwareman	95.00		95.00
Forester	105.00		105.00
Miner	95.00		95.00
Salesgirl		105.00	105.00
Contractor	115.00		115.00
Accountant	95.00		95.00
Street Cleaner	95.00		95.00
Photographer	115.00		115.00

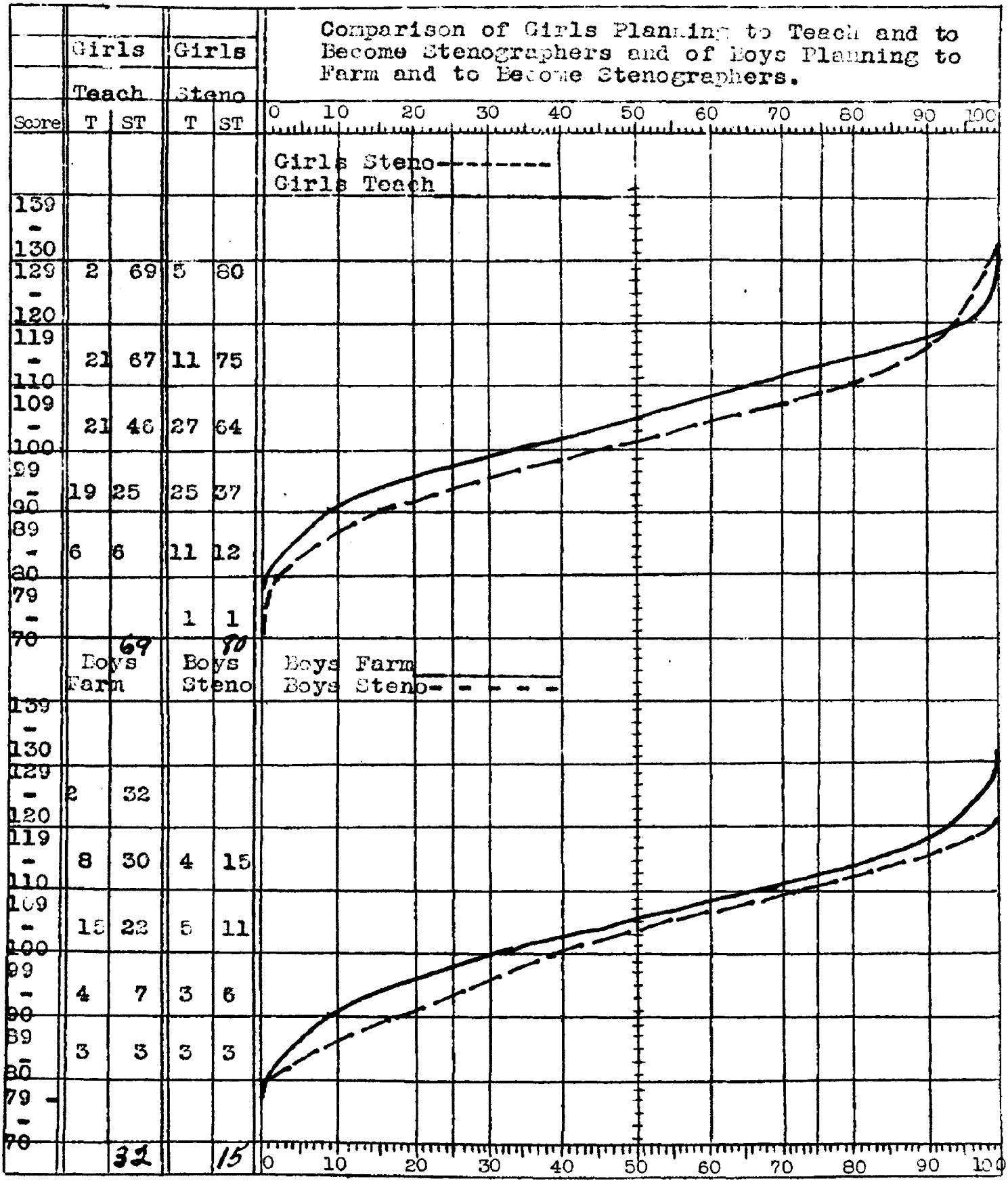
TABLE XXIII (Con't)

Occupation	Median I.Q. Boys	Girls	Both
Telephone Operator		95.00	95.00
Navy	135.00		135.00
Printer	125.00		125.00
Journalist		105.00	105.00
Storekeeper	115.00		115.00
Auto Shop	115.00		115.00
Teach Dancing		95.00	95.00
Engineer	95.00		95.00
Aviator	85.00		85.00
	104.14	101.46	103.76

Those students planning to enter the teaching profession are 3.12 points superior to those students who desire to become stenographers. The boys planning to enter farming and ranching activities are superior both to the students entering the teaching profession and the would-be stenographers. Those students who said they would do anything made up a part of the group who were going to go to work before going on to school. Percentile Graph VI shows the comparison between the intelligence of girls planning to enter teaching and stenographic fields and between boys planning to enter farming and stenographic work.

PERCENTILE GRAPH VI

Score	Girls Teach T	Girls Teach ST	Girls Steno T	Girls Steno ST
139 - 130				
129 - 120	2	69	5	80
119 - 110	21	67	11	75
109 - 100	21	46	27	64
99 - 90	19	25	25	37
89 - 80	6	6	11	12
79 - 70			1	1
		69		80
	Boys Farm		Boys Steno	
139 - 130				
129 - 120	2	32		
119 - 110	8	30	4	15
109 - 100	15	22	5	11
99 - 90	4	7	3	6
89 - 80	3	3	3	3
79 - 70				
		32		15



Comparison with the Results in Massachusetts: The investigation of occupational plans in Massachusetts dealt with the seniors. Those seniors who said they were not planning to go on to school were asked what they intended to do. Thus the data is comparable to that in this study except that this study deals with junior students. Table XXIV shows the number and percentage planning to enter the various occupations for the juniors in Montana and the seniors in Massachusetts.

TABLE XXIV

COMPARISON OF INTELLIGENCE OF STUDENTS NOT PLANNING TO GO ON TO SCHOOL IN MASS. AND MONT.

Occupations [14]	Number of Cases		% of cases	
	Mass. Seniors	Mont. Juniors	Mass. Seniors	Mont. Juniors
Clerical Work	680	97	64.00	23.43
Undecided	130	133	12.00	32.12
Skilled Artisan	68	28	6.00	6.76
Engineer	59	1	5.00	.24
Business	26	3	2.50	.75
Farmer	21	32	2.00	7.72
Musician	18	12	2.00	2.89
Teacher	16	70	2.00	16.91
Home-maker	13	2	1.00	.49
Journalist	12	2	1.00	.49
Scientist	8		1.00	
Nurse	8	15	1.00	3.61
Miscellaneous	5	19	.50	4.59
	1,064	414	100.	100.00

14. Classification of occupations given by Colvin and MacPhail in footnotes on p. 10 was used.

There were more than twice as many Massachusetts seniors as Montana juniors involved in this comparison. According to percentages nearly three times as many Massachusetts seniors expressed the intention to enter the clerical field as did Montana juniors. However, nearly three times as many students in Montana were undecided concerning their future occupation. Since Massachusetts is a highly industrialized state, students there have more chances to secure employment. In the occupations of skilled artisans and musicians the percentage is practically the same. On the basis of percentage, farming was more than three times as popular with the boys in Montana. This is no doubt explained by the fact that Montana is essentially an agricultural state. More students had signified their intentions to enter the teaching profession in Montana than in Massachusetts. Until 1930 preparation for a rural school teacher could be received in the high schools of the state of Montana. Everyone of the students saying they would teach had had this training. This type of training was not open to the students in Massachusetts. Therefore all who wanted to teach there must go on to school before doing so.

Summary: The median I.Q. for those students planning to go to work at once indicated that the boys were superior to the girls. The superiority of the boys over the girls in median I.Q. is greater here than it was for all the students used in this study. Almost one-third of the juniors did not

know what they would do when they graduated fro high school. These students were awaiting until a job arose. They had no plans. Two-fifths of the juniors planned to enter the stenographic and teaching fields. Those students planning to teach were superior mentally to the juniors who wanted to enter the clerical work. There is considerable disagreement between the percentages of students planning to enter the different occupations of Massachusetts seniors and Montana juniors. This difference seems to be largely due to the fact that the nature of the states is very different--Massachusetts, highly industrialized; Montana, largely agricultural.

CHAPTER VI

INTELLIGENCE AND COLLEGE INTENTIONS

Question eleven in the questionnaire asked "Do you plan to go to some other school or college after you graduate from high school?" followed by the question "If so, name the school or college?"

Planning to go on to School: Six hundred and seventy-three students said they intended to go on to school. Heretofore 259 of these students who were planning to go to work immediately were also planning to go on to school at some later time. Table XXV gives the number of boys and girls planning to go on to school, the per cent of each, and the median I.Q. for each sex and for both sexes.

TABLE XXV

INTELLIGENCE OF JUNIORS PLANNING TO GO TO SCHOOL

Sex	Cases	Per Cent	Median I.Q.
Boy	285	30.48	106.27
Girls	388	41.49	104.39
Both Sexes	673	71.98	105.20

Table XXV shows that the median I.Q. of the students planning to continue their education was higher than the state median (104.54) for all the students. About 11 per cent

more girls than boys were planning to continue their education although the state average indicated that the girls had a poorer native mental ability than the boys. The boys planning to go on were also superior to the girls that were planning to go on to school. Percentile Graph VII shows the intelligence of the juniors planning to continue their training.

Type of Schools Chosen: Almost one-third of the students planning to continue their education, as given in Table XXVI planned to attend a university. More than one-fourth of the students were undecided as to the type of school they would attend. Approximately one-sixth of the students, mostly

TABLE XXVI

DISTRIBUTION OF THE TYPE OF COLLEGE CHOSEN

Type of School	Cases	Per Cent
University	205	30.46
Undecided	181	26.89
Normal	109	16.20
College-Technical & Agr.	87	12.92
Business College	35	5.20
Trade Schools	17	2.53
Hospital	14	2.08
Conservatory	12	1.78
Physical Education	3	.44
Dental	1	.15
Y.M.C.A.	1	.15
Western Union College	1	.15
Westpoint	1	.15
Annapolis	1	.15
Dancing School	1	.15
Kindergarten	1	.15

TABLE XXVI (Con't)

Type of School	Cases	Per Cent
Art	1	.15
Poultry Institute	1	.15
Academy of Speech Arts	1	.15
	673	100.00

girls, planned to go to normal schools. Nearly one-third of the students desired to attend a university while less than half as many indicated they preferred a technical or agricultural college. Only one-twentieth indicated an intention to attend a business college.

Intelligence According to the Type of School Chosen: Table XXVII gives the median I.Q. by sexes for the students choosing various types of schools.

PERCENTILE GRAPH VII

Score	Boys T	Boys ST	Girls T	Girls ST
130	32	285	3	388
120	51	282	31	385
110	66	251	73	354
100	114	185	150	281
90	51	71	98	185
80	17	20	24	27
70	3	3	3	3
	285		388	

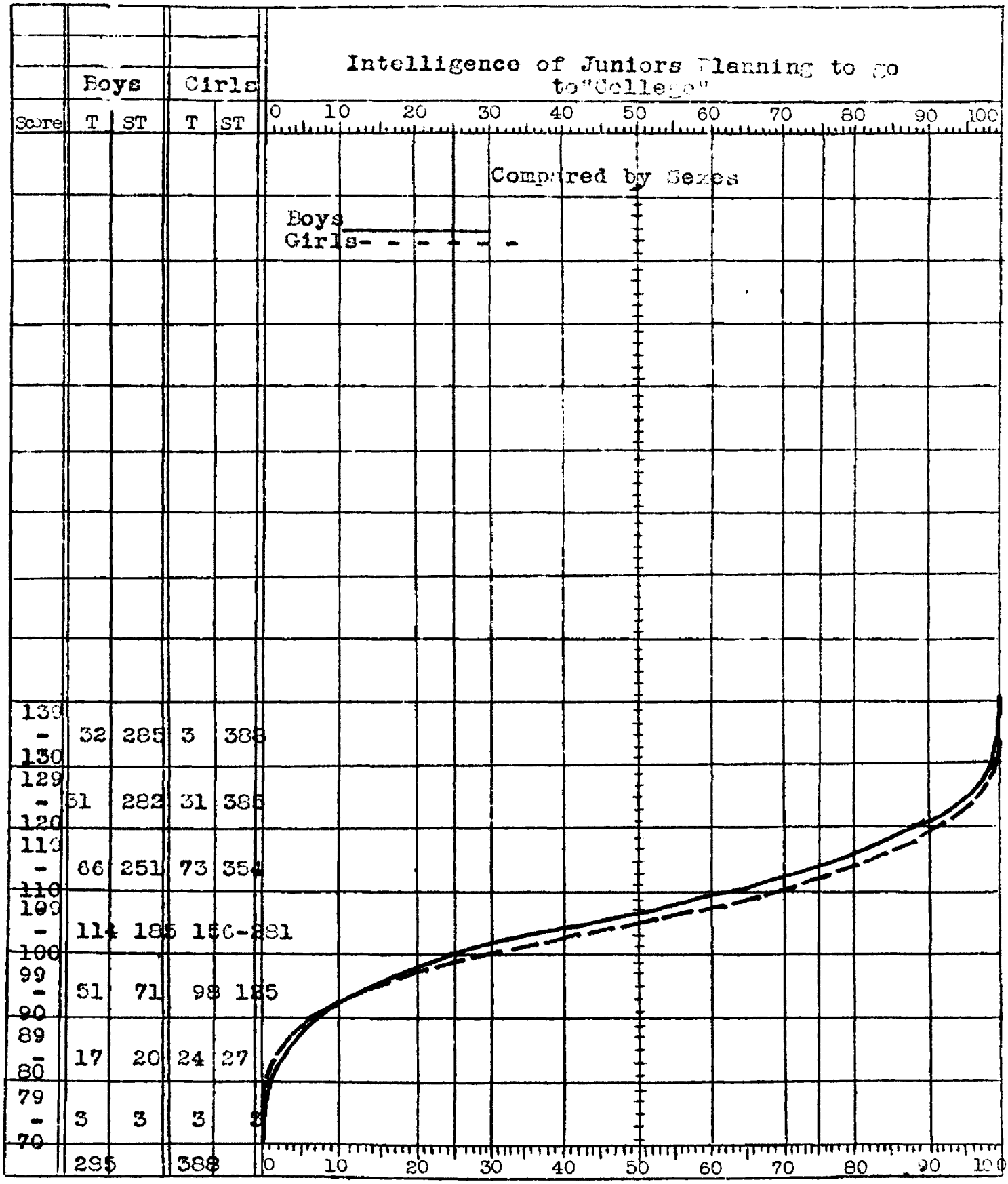


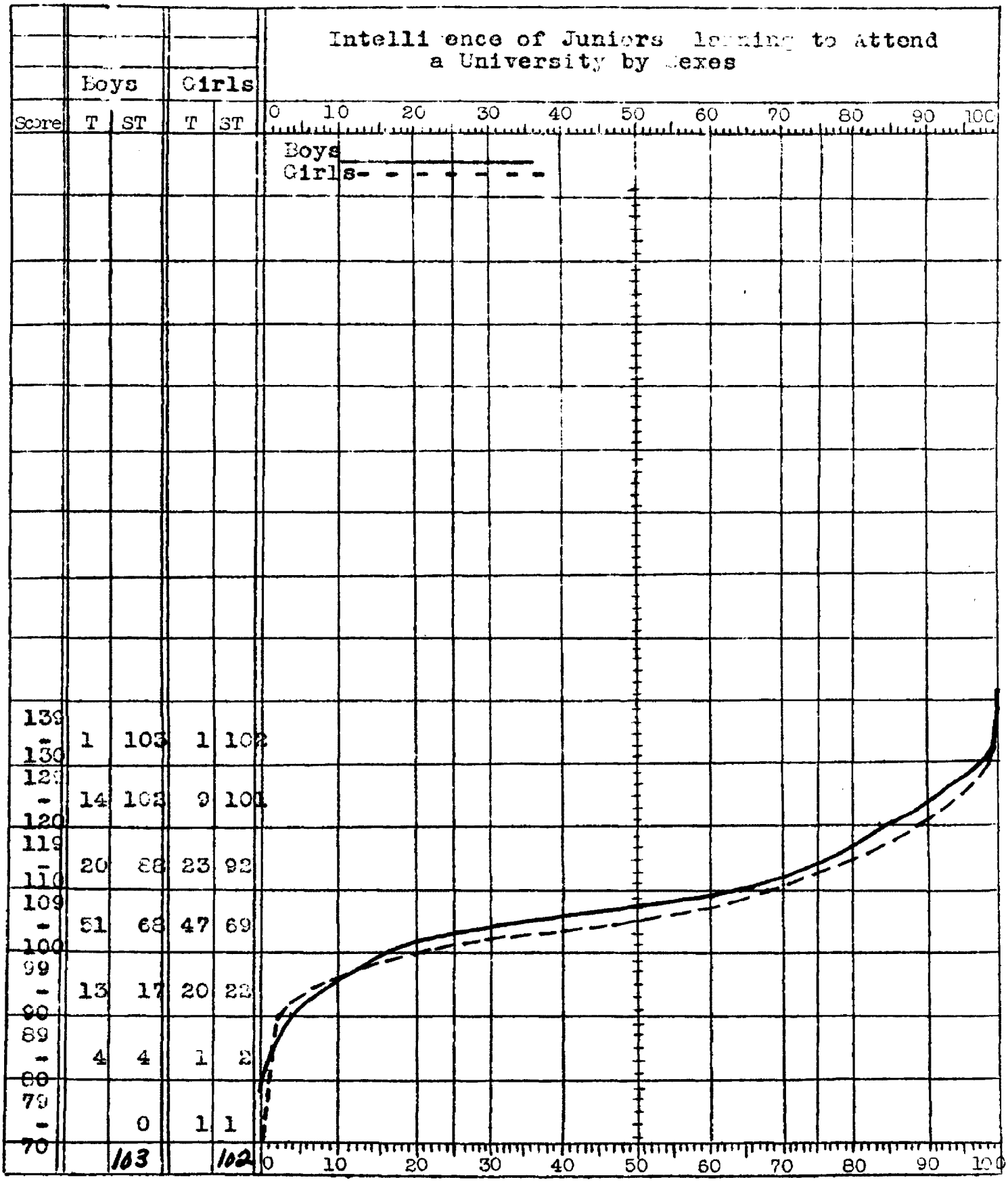
TABLE XXVII

INTELLIGENCE OF JUNIORS ACCORDING TO SCHOOL CHOSEN

School	Median I.Q. Boys	Girls	Both Sexes
University	106.76	106.06	106.49
Normal	105.00	103.21	103.84
Undecided	105.54	101.52	103.84
College Technician & Agricultural	106.48	105.00	106.12
Business College	107.50	104.69	106.52
Trade School	107.00		107.00
Hospital		100.83	100.83
Conservatory	92.50	100.83	98.00
Physical Education		115.00	115.00
Dental	85.00		85.00
Y.M.C.A.	105.00		105.00
Western Union C.	105.00		105.00
Westpoint	105.00		105.00
Annapolis	115.00		115.00
Dancing School		105.00	105.00
Kindergarten		115.00	115.00
Art		115.00	115.00
Poultry Institute	105.00		105.00
Academy of Speech Arts		115.00	115.00

Among those types of schools having at least ten choices, the students planning to attend a business college and university lead all the others with the best median I.Q. Percentile Graph VIII shows the intelligence of boys and girls planning to attend a university. The students who were unable to decide what type of institution to enter and those who planned to go to attend a normal school had exactly the same median I.Q. The students who were planning to attend a college were very close in median I.Q. to those students who were planning to go to a

PERCENTILE GRAPH VIII



Score	Boys T	Boys ST	Girls T	Girls ST
130	1	103	1	102
120	14	102	9	101
110	20	88	23	92
100	51	68	47	69
90	13	17	20	22
80	4	4	1	2
70		0	1	1
		103		102

business college or university. The students who were planning to attend a university, business college and agricultural or technical college were a little more than two points above the state median I.Q. in their median I.Q.. The classification necessary to include all the choices made by Montana juniors is such that it is not comparable with the classification used by other investigators.

Juniors Planning to Attend University of Montana: Almost one-fifth of the students going to school were planning to attend the State University of Montana. Table XXVIII gives the number, percent and the median I.Q. of the students with such intentions.

TABLE XXVIII

INTELLIGENCE OF JUNIORS PLANNING TO ATTEND THE UNIVERSITY OF MONTANA

Sex	Cases	Per cent	Median I.Q.
Boys	58	8.62	107.00
Girls	69	10.26	106.21
Both Sexes	127	18.87	106.64

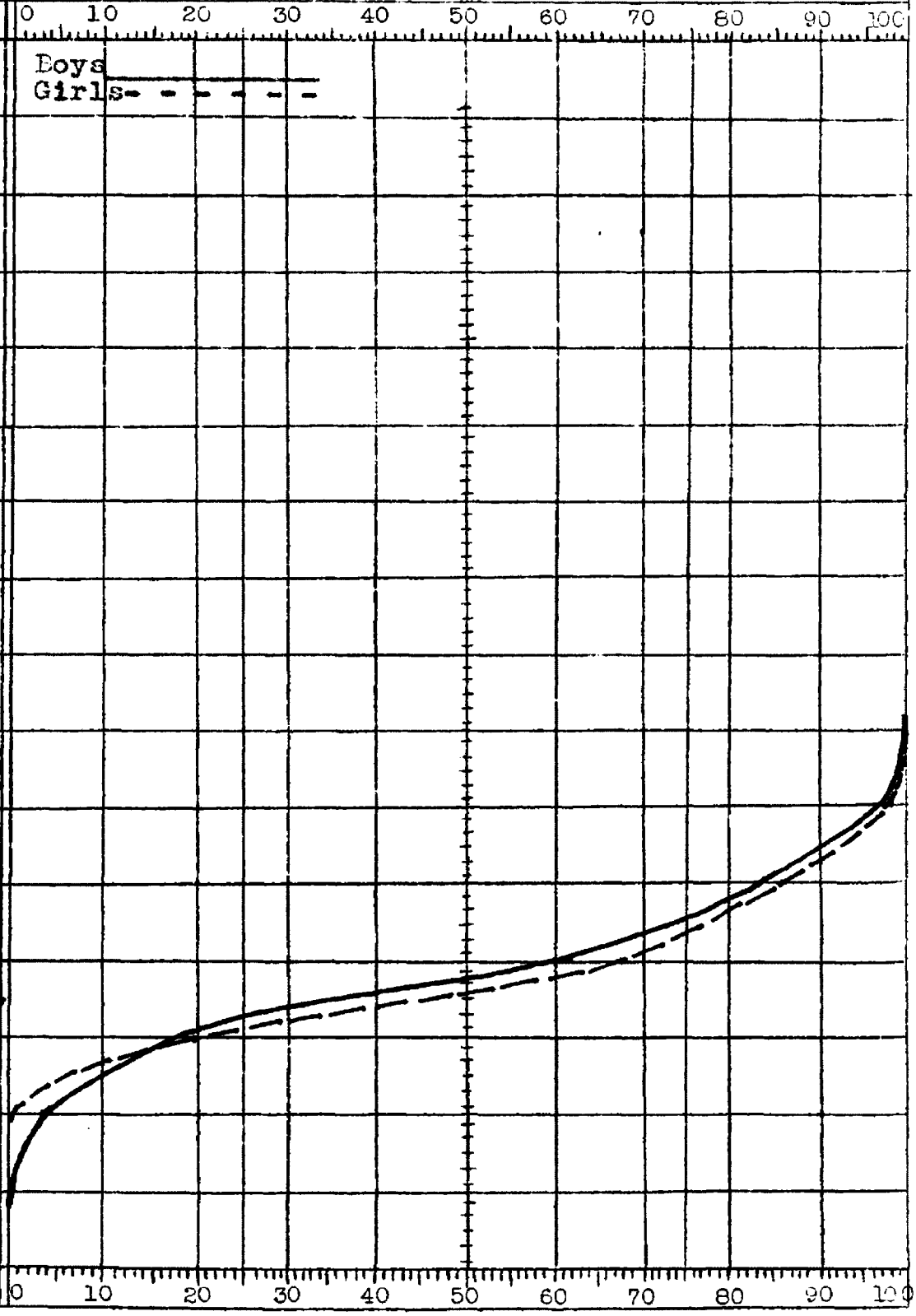
The students who were planning to attend the State University of Montana were .15 points higher in their median I.Q. than the median I.Q. of all the students planning to attend a university. Percentile Graph IX shows intelligence by sexes of juniors planning to attend the University of Montana.

Summary: The students planning to go on to school ha a higher median I.Q. than the state median for all students. The boys still had a higher median I.Q. than the girls. More girls than boys were planning to go on to school. Nearly one-third of the students who wanted to continue their education intended to attend a university. One-fifth of all the students who wanted to continue their education were planning to go to the University of Montana. The students who desired to enter the University of Montana were slightly superior to the students in median I.Q. who were considering matriculation at some university.

PERCENTILE GRADE IX

Intelligence of Juniors Planning to Attend the State University of Montana by Sexes.

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	1	58	1	69
129 - 120	8	57	8	68
119 - 110	13	49	13	60
109 - 100	25	36	33	47
99 - 90	9	11	14	14
89 - 80	2	2		0
79 - 70		0		0
		58		69



CHAPTER VII

INTELLIGENCE AND CHOICE OF LIFE OCCUPATION

Each student was asked what life occupation he expected to follow ultimately and if anything prevented him from carrying out his desires.

Juniors Who Have Chosen Their Life Work: Table XXIX shows by sexes the number and per cent of the juniors who had, and had not, chosen an occupation.

TABLE XXIX

SELECTION OF AN OCCUPATION BY SEXES

	Cases			Per Cent		
	Boys	Girls	Both	Boys	Girls	Both
Occupation Selected	285	407	692	30.41	43.43	73.85
Occupation Unselected	128	117	245	13.77	12.49	26.15

Nearly one-sixth more girls than boys had made their choice of an occupation for life. Table XXX shows that the median I.Q. for those students who had selected an occupation was above the state median (104.54) while the median I.Q. for those who had not selected an occupation was below. The expression of choice was not highly reliable as will be shown in Chapter XII.

TABLE XXX

INTELLIGENCE ACCORDED TO OCCUPATIONAL SELECTION BY SEXES

Sex	Median I.Q.		
	Occupation Selected-	Occupation Unselected-	State Median
Boys	106.38	104.10	105.24
Girls	105.10	102.84	103.97
Both	105.42	103.66	104.54

Percentile Graph X shows intelligence of Juniors by sexes who have not selected an occupation.

Occupations Selected: Table XXXI gives the occupations chosen, and the number and percentage of the juniors choosing each.

TABLE XXXI

DISTRIBUTION OF JUNIORS ACCORDING TO OCCUPATIONAL CHOICES

Occupation	Boys		Girls		Both Sexes	
	Cases	Per cent-	Cases	Per Cent-	Cases	Per Cent
Teaching	10	1.07	199	21.24	209	22.30
Clerical Work	21	2.24	84	8196	105	11.20
Farmer & Rancher	28	2.98	2	.20	30	3.20
Telegrapher	1	.11	1	.11	2	.22
Accountant	6	.64	1	.11	7	.75
Public Entertainer	3	.33	2	.22	5	.55
Scientist	8	.86	7	.75	15	1.61
Musician	5	.55	17	1.81	22	2.35
Law	13	1.39	1	.11	14	1.49
Civil Service	4	.42	1	.11	5	.53
hysical Dir.	3	.33	2	.22	5	.55
Journalist	10	1.07	7	.75	17	1.82
Cartoonist	2	.22	1	.11	3	.33

PERCENTILE GRAPH X

Intelligence of Jrs. By Sexes who Have Not Selected an Ultimate Life Occupation

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	1	128	1	117
129 - 120	10	127	3	116
119 - 110	25	117	23	113
109 - 100	50	92	44	90
99 - 90	30	42	31	46
89 - 80	11	12	15	15
79 - 70	1	1		
		128		117

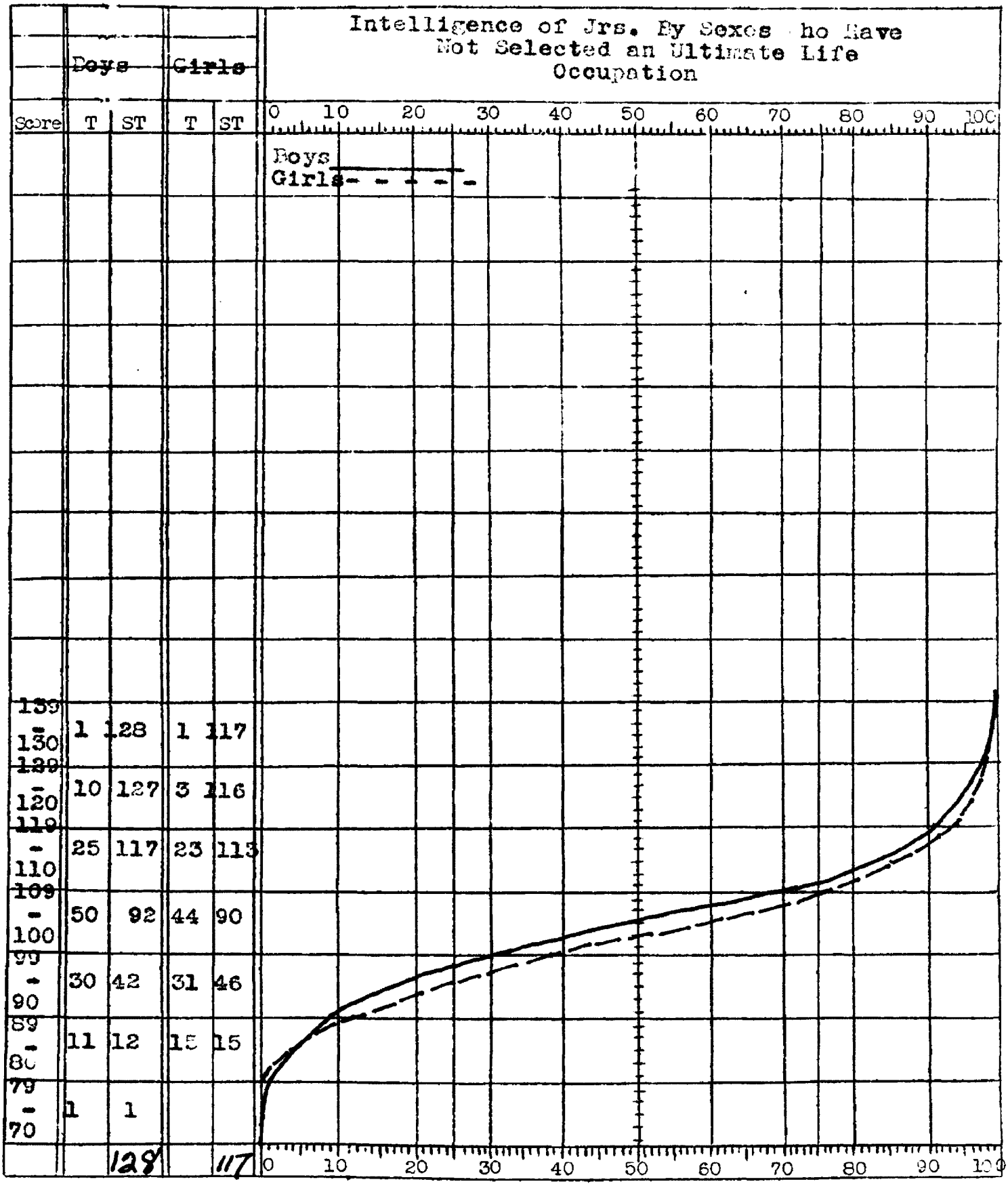


TABLE XLXI (Con't)

DISTRIBUTION OF JUNIORS ACCORDING TO OCCUPATIONAL CHOICE

Occupation	Boys		Girls		Both Sexes	
	Cases	Per cent	Cases	Per Cent	Cases	Per cent
Medical	9	.96	5	.55	14	1.51
Engineer	88	9.38			88	9.38
Nurse			41	4.37	41	4.37
Dietitian			1	.11	1	.11
Dancing Instructor			2	.22	2	.22
Horticulturist	1	.11			1	.11
Animal Husbandry	1	.11			1	.11
Jeweler	2	.22			2	.22
Electrician	15	1.60			15	1.60
Architect	2	.22			2	.22
Seaman	1	.11			1	.11
Dressmaker			2	.22	2	.22
Interior Decorator			5	.55	5	.55
Salespersons	5	.55	1	.11	6	.66
Librarian			6	.64	6	.64
Dentist	6	.64			6	.64
Beauty Specialist			1	.11	1	.11
Hardwareman	1	.11			1	.11
Draftsman	2	.22			2	.22
Mechanic	22	2.35			22	2.35
Missionary			1	.11	1	.11
Artist			2	.22	2	.22
Housekeeper			4	.43	4	.43
Carpenter	1	.11			1	.11
Author	1	.11			1	.11
Banker			1	.11	1	.11
Detective	1	.11			1	.11
Surveyor	1	.11			1	.11
Forester	5	.53			5	.53
Business Executive	1	.11			1	.11
Minister			1	.11	1	.11
Foreign Trade	1	.11			1	.11
Resort Proprietor	1	.11			1	.11
Speech Interpretator	1	.11			1	.11
Contractor	1	.11			1	.11
	283	40.89	409	59.11	692	73.85

Forty-nine different occupations were represented in the choices made by the juniors for their ultimate life occupations. Nearly one-fourth of both sexes wanted to teach. More than one-tenth of both sexes wanted to engage in some kind of clerical work. Almost another one-tenth of the boys wanted to become engineers. Only 3.20 per cent chose farming as their ultimate life occupation while more than 7 per cent of those students planning to go to work immediately had planned to become farmers. This is a natural advance in the choice of an occupation. The more training one has for a better or higher position the less apt is he to choose one in the lower group. If the 3.20 per cent is more than doubled by those not expecting to go on to school and this doubling process would continue for those eliminated each year from the high school, more than 56 per cent of those who were eliminated from high school at the end of their freshman year and those who dropped out for other reasons at the same time, would take up farming or ranching. Thus we would have enough farmers and ranchers, and there would be no real necessity for high school graduates to enter farming. Therefore advanced high school students are probably choosing occupations more wisely than they have been credited with doing in the past.

Table XLIII gives the occupations chosen and the median I.Q. by sexes for each occupational group.

TABLE XXXII

INTELLIGENCE ACCORDING TO OCCUPATIONAL CHOICE

Occupation	Median I.Q. Boys	Girls	Both Sexes
Teaching	110.00	104.32	105.05
Clerical Work	105.50	102.43	103.22
Farmer &Rancher	105.77	110.00	105.86
Telegrapher	105.00	105.00	105.00
Accountant	100.00	125.00	101.66
Public Entertainer	112.50	100.00	110.00
Scientist	106.25	116.83	113.57
Musician	105.00	103.57	103.67
Law	106.36	95.00	105.00
Civil Service	105.00	105.00	105.00
Physical Director	102.50	102.50	103.50
Journalist	101.66	112.50	106.25
Cartoonist	105.00	105.00	105.00
Medical	106.25	115.05	110.90
Engineer	10 .33		108.33
Nurse		99.06	99.06
Dietitian		105.00	105.00
Dancing Instr.		92.50	92.50
Horticulturist	95.00		995.00
Animal Husbandry	105.00		105.00
Jeweler	100.00		100.00
Electrician	105.00		105.00
Architect	110.00		110.00
Seaman	115.00		115.00
Dressmaker		10 .00	100.00
Interior Decorator		112.50	112.50
Salespeople	100.00	105.00	101.17
Librarian		101.25	101.25
Dentist	102.25		102.25
Beauty Specialist		95.00	95.00
Hardwareman	105.00		105.00
Drafting	100.00		100.00
Mechanic	100.00		100.00
Missionary		115.00	115.00
Artist		112.50	112.50
Housekeeper		101.66	101.66
Carpenter	95.00		995.00
Author	105.00		105.00
Banker		105.00	105.00

TABLE XXXII (Con't)

Occupation	Median I.Q. Boys	Girls	Both Sexes
Detective	95.00		95.00
Surveyor	105.00		105.00
Forester	107.50		107.50
Bus. Executive	115.00		115.00
Minister		125.00	125.00
Foreign Trade	105.00		105100
Resort Propr.	105.00		105.00
Speech Interpr.	105.00		105.00
Contractor	115.00		115.00

From Table XXXII it is shown that those students who planned to take up farming and ranching had a slightly higher median I. Q. than those students who planned to enter the teaching profession. Percentile Graph XI shows the intelligence of juniors planning to teach by sexes. Those students having an I. Q. over 110.00 planned to enter the following occupations: Scientist, seaman, interior decorator, missionary, artist, business executive, minister and contractor. In some cases the students planning to enter the above list of occupations would have had a lower median I. Q. if there had been more cases entering that occupation.

Comparison with Results in Indiana: Using the classification given by Book in his survey in Indiana there are sixteen classes of occupations to which list I found it necessary to add two more classes of occupations to include all Montana juniors. Table XXXIII gives the distribution and median for the Montana juniors

using the electrical [illegible]

only eleven lines of [illegible]

but [illegible]

[illegible]

further [illegible]

better [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	90	[illegible]	[illegible]
[illegible]	210	[illegible]	[illegible]
[illegible]	19	[illegible]	[illegible]
[illegible]	80	[illegible]	[illegible]
[illegible]	37	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	88	[illegible]	[illegible]
[illegible]	117	[illegible]	[illegible]
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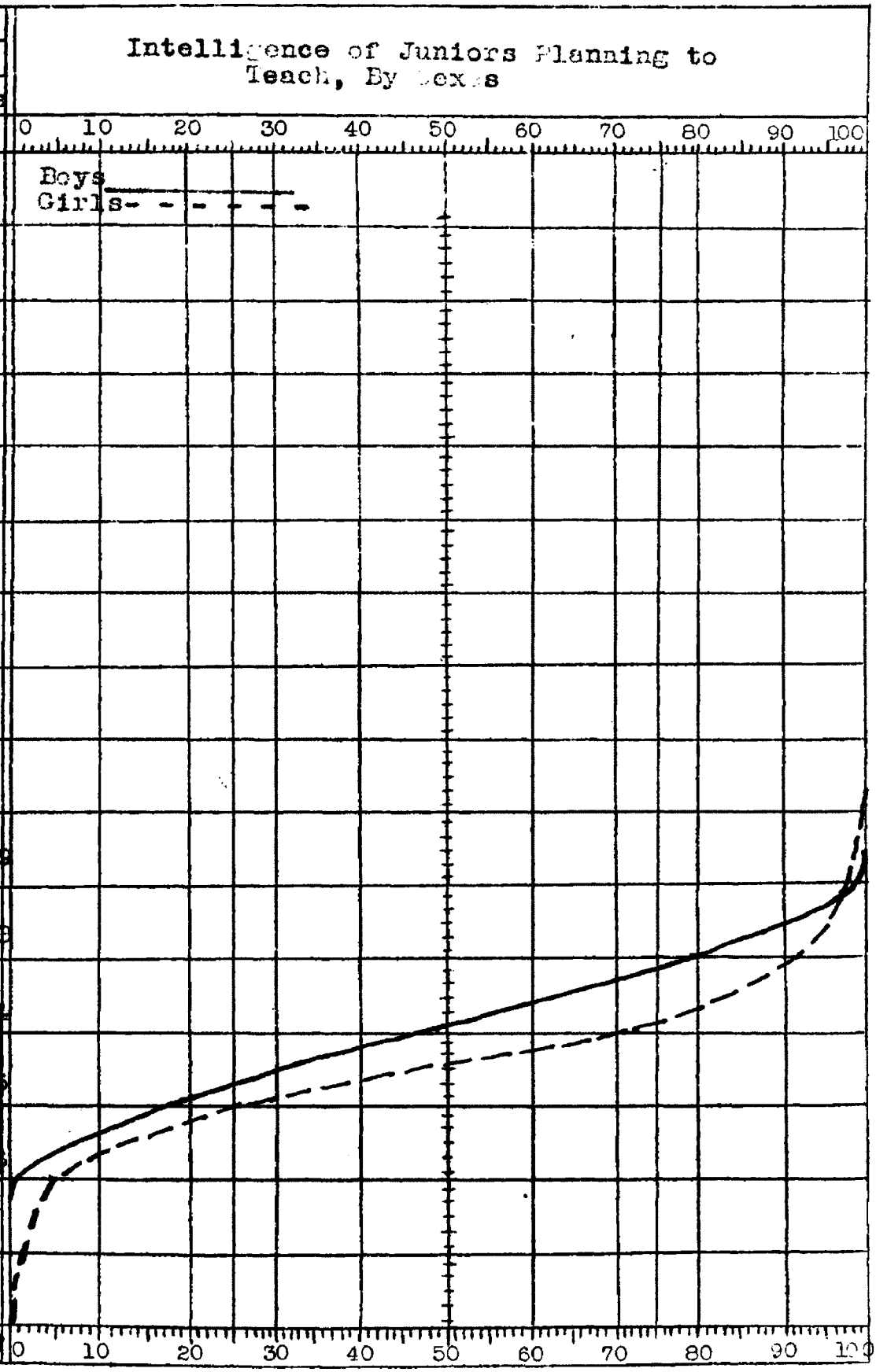
[illegible]	1	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	42	[illegible]	[illegible]
[illegible]	84	[illegible]	[illegible]
[illegible]	30	[illegible]	[illegible]
[illegible]	4	[illegible]	[illegible]
[illegible]	1	[illegible]	[illegible]
[illegible]	6	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

PERCENTILE GRAPH XI

Intelligence of Juniors Planning to Teach, By Sexes

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130			1	199
129 - 120	2	10	14	198
119 - 110	3	8	38	184
109 - 100	3	5	90	146
99 - 90	2	2	47	56
89 - 80			7	9
79 - 70			2	2
		10		199



negligible place in Montana secondary work. Therefore, why were the choices in Montana more varied than the choices in Indiana? Perhaps the fact that Montana is a new state made up of a very heterogeneous population points to the answer.

These students intending to become teachers have a median I.Q. .25 points above the state median of 104.54. The students entering the following groups of occupations had a median I.Q. higher than the median I.Q. for the prospective teachers were: physician, scientist, engineer, business and commercial pursuits, lawyer, journalist, skilled mechanics or artisans, social worker, entertainer, farmer and rancher and minister. These students planning to become nurses had the lowest median I.Q.. Table XXXIV compares according to percentages the students planning to enter each and the number of students intending to follow certain occupations for Indiana seniors and Montana juniors.

TABLE XXXIV

COMPARISON OF THE DISTRIBUTION OF STUDENTS ACCORDING TO OCCUPATIONAL CHOICES IN INDIANA AND MONTANA

Occupational Choice	Indiana Seniors	Montana Juniors
Physician	2.6	2.14
Teacher	29.7	23.05
Scientist	1.3	1.81
Engineer	13.2	9.28
Business & Com'l Pursuits	4.6	3.91
Lawyer	2.9	1.49
Journalist	1.0	2.34
Clerical Worker	19.9	12.49

TABLE XXXIV (Con't)

Occupational Choice	Indiana Seniors	Montana Juniors
Skilled Mech. or Artisans	5.5	4.05
Social Worker	.8	.11
Entertainer	.6	.53
Nurse	3.0	4.37
Musician and Artist	4.0	2.56
Farmer & Rancher	10.0	3.20
Homemaker	.3	.42
Minister	.4	.11
Librarian		.64
Miscellaneous		1.17

In a comparison of the percentages of the Montana juniors in each occupation with those of the Indiana seniors in each occupation there is considerable agreement. In only a few cases were the results fairly divergent. The big difference was found in the engineer, teacher, lawyer, journalist, clerical worker, entertainer, musician and artist, and farming occupations. The greatest difference appeared in the farmer, clerical worker and teacher occupational choices.

Prevention of Intentions: One-tenth of the boys and girls in this junior class said that something would prevent or might prevent them from reaching their ideal for their future occupation. Table XXXV shows the reasons given that might prevent the fulfillment of intentions. The cases of boys who would be prevented from entering their desired occupation exceeds that of the girls by one only. Eighty-six of the ninety-nine said

TABLE XXXV

REASONS PREVENTING FULFILLMENT OF OCCUPATIONAL INTENTIONS

Reasons	Number Giving Each Reason		
	Boys	Girls	Total
Money	45	41	86
Poor Health		3	3
Needed By Folks	1	1	2
Parents Object	1	1	2
Too Long	1		1
Marriage		1	1
Lack of Proper Training	1		1
Poor Eyesight		1	1
Cannot Decide		1	1
Orphan (Money)	1		1
	50	49	99

that lack of money would prevent them from carrying out their intentions. Nine different reasons were given that might prevent the fulfillment of intentions.

Summary: Nearly three-fourths of the Montana juniors had chosen their ultimate life occupation. Those having chosen an occupation had a median I.Q. nearly two points higher than these students who had not chosen an occupation. Forty-nine different occupations were chosen by the Montana juniors. Almost one-fourth intended to become teachers. When the number choosing the various occupations were compared with the number of the seniors in Indiana there was fairly close agreement throughout. Lack of finances would prevent more Montana juniors from fulfilling their intentions than all other reasons combined.

CHAPTER VIII

INTELLIGENCE AND NATIONALITY

There is a common feeling that American people of the white race are much superior to the Europeans and people of colored races. To what extent do the Montana juniors confirm this popular belief, if at all?

Student's Nationality. Each student was asked to give the country or state in which he was born. Table XXXVI shows the distribution by sexes and the intelligence of the juniors born in Montana. Five hundred and thirty of the

Table XXXVI

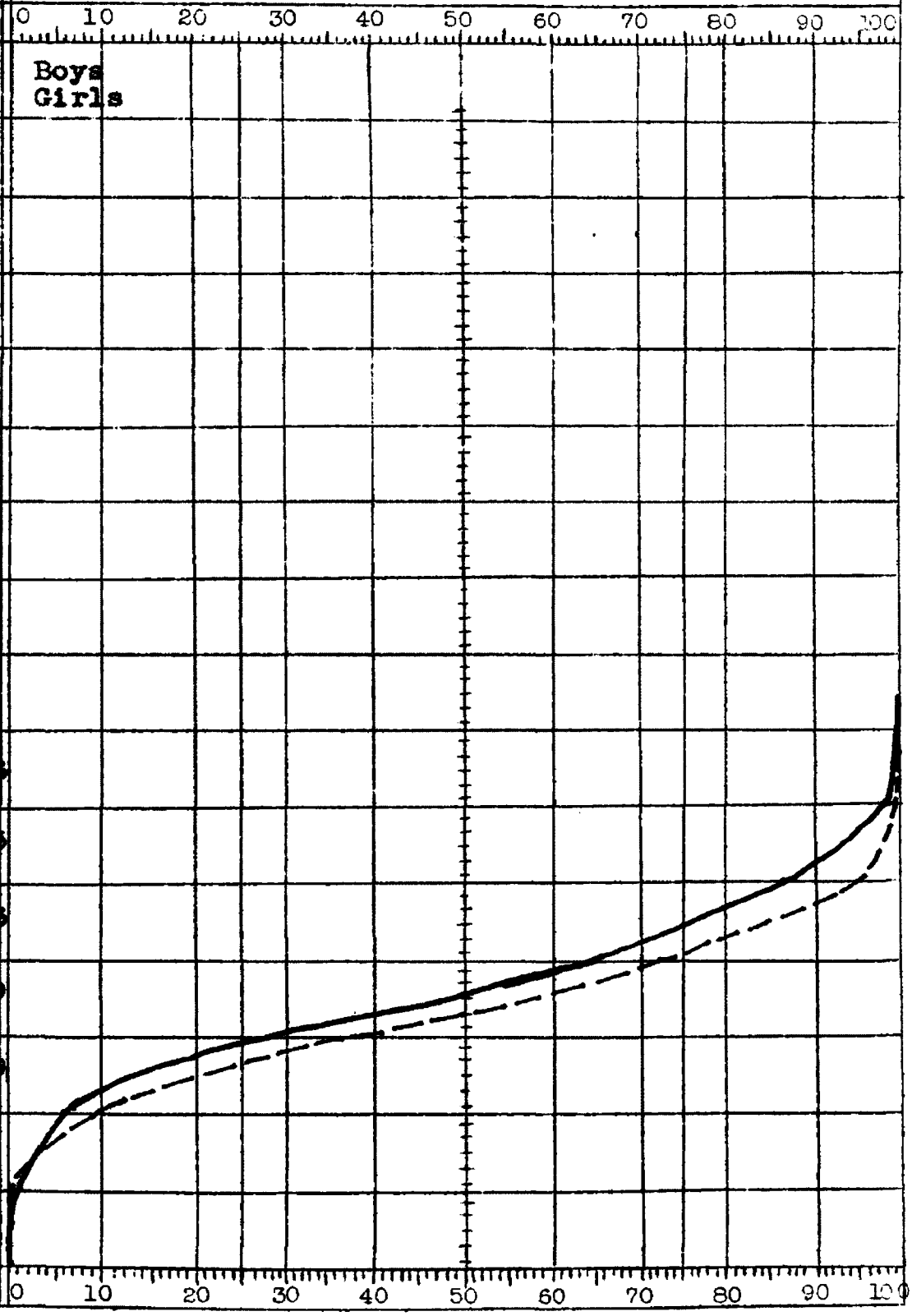
Distribution and Intelligence by Sexes of Juniors Born in Montana

Sex	Cases	Per Cent	Median I.Q.
Boys	254	27.00	105.38
Girls	276	29.42	105.40
Both Sexes	530	56.56	105.39

Montana juniors were born in the state of Montana. There were a few more girls than boys native Montanans. It is a significant fact that the boys and girls had practically the same median I.Q. The median I.Q. for Montana juniors born in Montana was .85 above the state median of 104.54. Per centile Graph XII shows the intelligence by sexes of

Percentile Graph XII
Intelligence of Juniors Born in Montana by Sexes

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	3	254	1	276
129 - 120	18	251	12	275
119 - 110	64	233	54	263
109 - 100	92	169	100	209
99 - 90	62	77	81	109
89 - 80	12	15	26	28
79 - 70	3	3	2	2
	254		276	



the juniors born in Montana.

Table XXXVII gives the median I.Q. for those students born in Montana, those born elsewhere, and those not giving the state of their birth.

Table XXXVII

Distribution and Intelligence of Juniors According to Birthplace

	Place of Birth		
	Montana	Elsewhere	Not Given
Per Cent	54.01	45.89	.10
Median I.Q.	105.39	101.53	95.00

Those students born in Montana were clearly superior in their native mental equipment to those students born elsewhere. Percentile Graph XIII compares the intelligence of juniors born in Montana and elsewhere. Only one person did not give his state of birth. The median I.Q. in this case was only 95.00. Classifying the place of birth of the juniors by countries, the results are seen in Table XXXVIII. One case represents .10 per cent; two cases .22 per cent, etc. Over one-half of the girls were born in the United States. Over one-tenth as many more girls were born in the United States than were boys. Canada was the native country of the next largest number of juniors. All but four per cent of the juniors were born in the United States. The four per cent born elsewhere were distributed among eleven different countries. The

Percentile Graph XIII
Comparison of Juniors Born in Montana and Elsewhere

Score	Montana T	Montana ST	Elsewhere T	Elsewhere ST
139 - 130	4	530	2	409
129 - 120	30	526	30	405
119 - 110	113	426	85	378
109 - 100	192	378	158	290
99 - 90	143	186	89	138
89 - 80	38	43	40	43
79 - 70	5	5	3	3

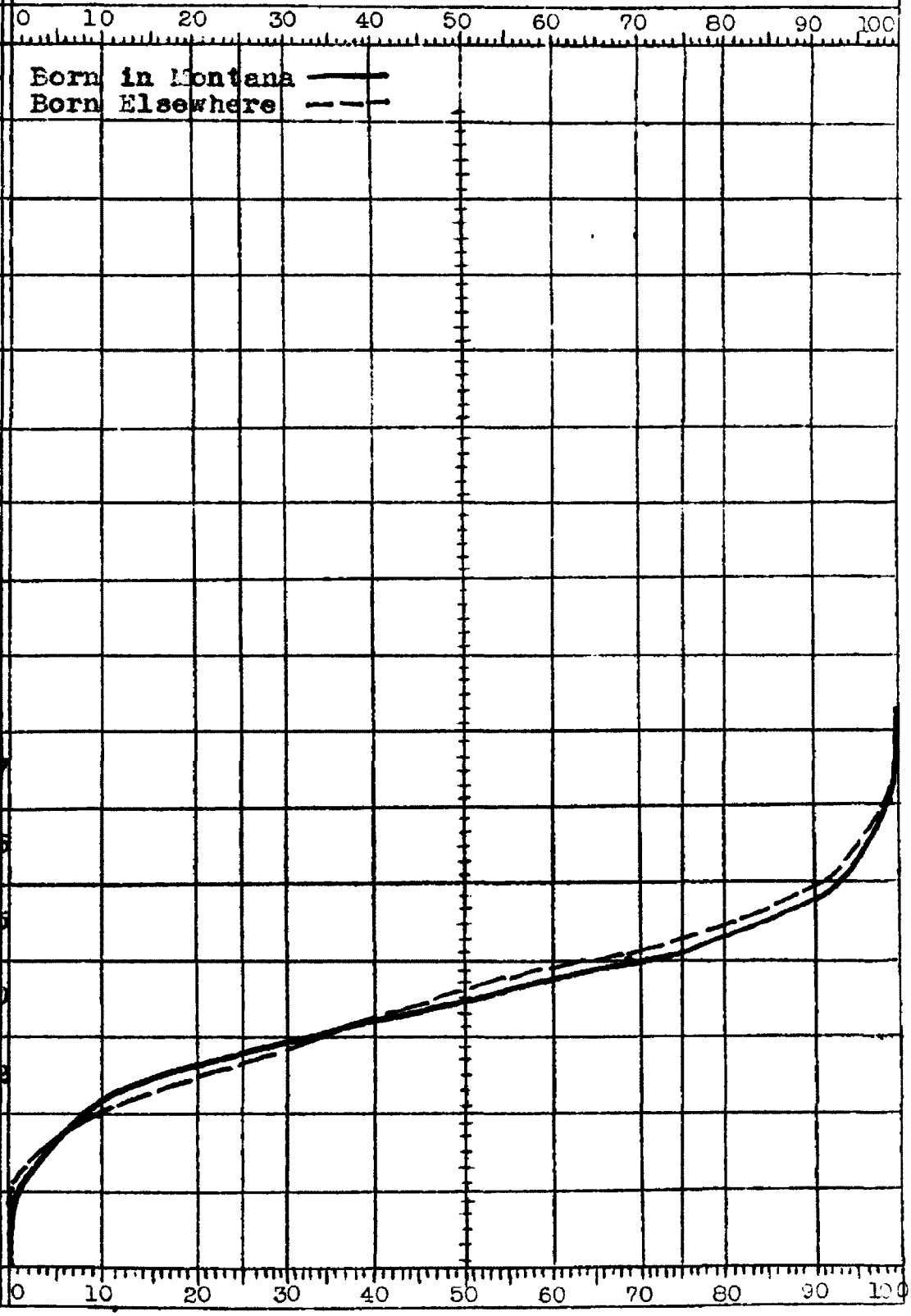


Table XXXVIII

Distribution of Juniors According to Native Country

Country	Per cent according to sex		
	Boys	Girls	Both Sexes
United States	42.17	53.58	95.74
England	.75	.44	1.18
Switzerland		.10	.10
Canada	.44	1.08	1.49
Holland	.10	.10	.22
Sweden	.10	.10	.22
Scotland	.22	.10	.33
Alaska		.10	.10
Ireland	.10		.10
Russia		.22	.22
Asia	.10		.10
Philippine Islands	.10		.10
Not Given		.10	.10
	44.08	55.92	100.00

United States, Canada and England were the native countries according to percentages of the largest number of juniors. Five countries were represented by only one student.

Intelligence of Juniors in Relation to Nationality. Table XXXIX gives the median I.Q. for the students from the countries listed in Table XXXVIII. The students born in the United States were just slightly below the state median I.Q. This may be due to the large number of juniors born in the United States. Selection had not operated as much in this group as in the other groups. In the two cases where there was only one student from the country there was a median I.Q. of 115.00. A larger number of cases would have changed this

result. Asia, with only one student, had the lowest median I.Q. The student born in the Philippine Islands was not a

Table XXXIX

Intelligence of Juniors According to Their Native Country

Country	Median I.Q. by Sexes		
	Boys	Girls	Both Sexes
United States	112.70	101.10	104.00
England	111.25	101.66	108.25
Switzerland		115.00	115.00
Canada	110.00	106.25	107.50
Holland	105.00	95.00	100.00
Sweden	105.00	105.00	105.00
Scotland	88.00	95.00	92.00
Alaska		115.00	115.00
Ireland	95.00		95.00
Russia		105.00	105.00
Asia	75.00		75.00
Philippine Islands	105.00		105.00
Not Given		95.00	
	105.24	103.97	104.54

Filipino but the son of a University professor who had formerly taught in the Philippine Islands.

Father's Nationality in Relation to Intelligence of Juniors. Table XL gives the percentage of the fathers born in Montana according to the sex of the juniors and the median I.Q. for the juniors by sexes.

Table XL

Intelligence According to Fathers Native Montanans

	Boys	Girls	Both
Cases	11	10	21
Per Cent	1.17	1.07	2.24
Median I.Q.	101.67	104.37	104.09

The students whose fathers were born in Montana had a median I.Q. close to the state median of 104.54. Table XLI gives the countries of the fathers' births and the percentage from each country by sex of children.

Table XLI

Distribution of Fathers According to Country of Birth

Country	Per cent from each country by sex of children		
	Boys	Girls	Both
United States	28.49	38.20	66.70
Ireland	1.60	.96	2.54
Unknown	2.45	3.41	5.87
Sweden	1.49	1.17	2.67
Canada	1.07	2.13	3.20
Denmark	.33	.74	1.07
Germany	.64	1.92	2.56
Creotia	.10		.10
Belgium	.21		.21
France	.10	.10	.21
England	1.92	2.02	3.95
Finland	.33	.42	.74
Italy	.42	.33	.74
Switzerland		.64	.64
Austria	.42	.10	.53
Norway	1.81	2.99	4.80
Scotland	.96	.96	1.92
Holland	.21	.42	.64

Table XLI (Con't)

	Per cent from each country by sex of children		
	Boys	Girls	Both
Asia	.10		.10
Czechoslovia	.10		.10
Russia	.10	.21	.33
Wales		.33	.33
Poland		.42	.42
Luxemburg		.10	.10

One-twentieth did not know where their fathers had been born. Almost one-twentieth of the fathers were from Norway. Sweden, Denmark, Finland and Norway were the native countries of nearly one-tenth of the fathers of Montana juniors. Canada and England account for more than another one-twentieth of the fathers.

Table XLII gives the countries of the fathers' birth and the median I.Q. for the juniors by sexes. Of those countries which had been the birthplace of more than one-half of one per cent of the fathers, Canada leads according to the median I.Q. score of the students. Those students whose fathers were from Sweden had the next highest I.Q. Those students whose fathers were from England and the United States respectively ranked third and fourth according to the median I.Q.

Table XLII

Intelligence of Juniors According to the Native Country of Their Father

Father's Native Country	Median I.Q. for Juniors from Each Country		
	Boys	Girls	Both
United States	106.34	104.73	105.43
Ireland	105.00	101.25	103.18
Unknown	101.75	96.54	98.68
Sweden	107.86	107.00	107.81
Canada	102.50	110.62	108.75
Denmark	100.00	100.00	100.00
Germany	100.00	101.50	101.16
Croatia	105.00		105.00
Belgium	100.00		100.00
France	115.00	125.00	120.00
England	106.25	106.82	106.65
Finland	105.00	100.00	102.50
Italy	100.00	95.00	97.50
Switzerland		110.00	110.00
Austria	90.00	95.00	92.50
Norway	104.99	98.08	101.88
Scotland	105.00	97.00	98.12
Holland	105.00	92.50	100.00
Asia	75.00		75.00
Czechoslovakia	115.00		115.00
Russia	115.00	100.00	111.25
Wales		102.50	102.50
Poland		81.66	81.66
Luxemburg		105.00	105.00

Mothers' Nationality and the Intelligence of Juniors.

Three times as many mothers as fathers of the Montana juniors were born in Montana. The per cent of the mothers and the median I.Q. of the students whose mothers were born in Montana are given in Table XLIII.

Table XLIII

Intelligence of Juniors Whose Mothers Were Born in Montana

	Boys	Girls	Both Sexes
Per Cent	2.35	4.27	6.62
Cases	22	40	62
Median I.Q.	107.00	105.59	106.14

The median I.Q. for those students whose mothers were born in Montana was more than two points higher than the median I.Q. for those students whose fathers were born in Montana.

Table XLIV gives the percentages of mothers by the sex of the juniors according to their native country. From Table XLIV the mothers were born in the United States in 71.29% of the cases, while Table XLI showed that the fathers were natives of the United States in 66.70% of the cases. Thus more mothers were from the United States. For almost one-twentieth of the mothers the juniors did not know their birthplace. The countries which were the birthplace of most of the mothers were in order, respectively: United States, Norway, Canada, Sweden and England.

Table XLIV

Distribution of Mothers According To

The Country of Birth

Country	Per Cent by Sexes		
	Boys	Girls	Both
United States	29.35	41.94	71.29
Norway	1.71	2.34	4.05
Unknown	1.71	3.20	4.91
Germany	.42	1.49	1.91
Canada	1.81	2.14	3.95
Sweden	1.81	1.39	3.20
Croatia	.10		.10
England	1.71	1.29	3.00
Finland	.33	.64	.98
Ireland	.74	.42	1.16
Netherlands	.42	.21	.64
France	.21	.11	.33
Italy	.42	.33	.74
Poland		.33	.33
Russia	.10	.10	.21
Czechoslovakia	.10		.10
Austria	.42	.10	.53
Scotland	.86	.53	1.39
Switzerland	.10	.53	.64
Denmark	.10	.33	.42
Asia	.10		.10
Wales	.10		.10

Table XLV gives the countries of the mothers' births with the median I.Q. for the juniors according to sex. Those students whose mothers were born in Switzerland had the highest median I.Q. with England, United States and Sweden taking second, third and fourth places respectively.

Table XLV

Intelligence of Juniors According to

The Native Country of Their Mother

Country	Median I.Q. Boys	Girls	Both
United States	106.65	104.80	105.37
Norway	105.00	100.00	102.06
Unknown	102.50	97.73	100.65
Germany	91.66	97.50	97.22
Canada	105.00	104.34	104.54
Sweden	107.22	103.00	105.21
Croetia	105.00		105.00
England	106.25	106.36	106.28
Finland	105.00	100.00	101.67
Ireland	102.50	100.00	101.67
Netherlands	101.67	90.00	97.78
France	100.00	105.00	102.67
Italy	100.00	90.00	96.65
Poland		82.50	82.50
Russia	115.00	85.00	100.00
Czechoslovakia	115.00		115.00
Austria	90.00	95.00	91.00
Scotland	100.00	105.00	101.66
Switzerland	95.00	110.00	107.33
Denmark	95.00	105.00	102.50
Asia	75.00		75.00
Wales	105.00		105.00

The student who was born in Asia was the son of parents both of whom were born in Asia. He had the lowest I.Q. Those students whose mothers were from Germany, Netherlands and Austria had a median I.Q. also below 100.00.

Summary. More than one-half of the Montana juniors were born in Montana. The median I.Q. for those students born in Montana was above the state median for all students. The

juniors born in Montana were 3.86 points above the median I.Q. of those students born elsewhere. Only one student did not know where he had been born. The juniors were born in eleven countries besides the United States. The students born in the United States were slightly below the state median for all students. The student who was born in Asia had the lowest median I.Q. Not quite one-tenth of the fathers and mothers were born in Montana. The students whose mothers were born in Montana had a higher median I.Q. than those students whose fathers were born in Montana. The Scandinavian countries were the birthplace of nearly one-tenth of the fathers. However, Canada leads with the students whose fathers were born there having the highest median I.Q. More mothers were born in the United States than fathers. Norway, Canada and Sweden were the native countries of about one-tenth of the mothers. Those students whose mothers were born in Switzerland had the highest median I.Q.

CHAPTER IX

INTELLIGENCE AS RELATED TO FATHER'S OCCUPATION

Each student was asked to give his or her father's occupation. Since Montana is an agricultural state it would be expected that a large number of the fathers would be engaged in various agricultural pursuits as farming, ranching, horticulture and related activities.

Intelligence of Juniors as Related to Father in Agricultural Pursuits. Little less than one-third of the fathers were engaged in various lines of agricultural work. All types of agricultural pursuits will be listed in the tables under the head "Farming and Ranching". Table XLVI gives the number and percentage of fathers engaged in farming and ranching and the median I.Q. for the juniors by sexes.

Table XLVI

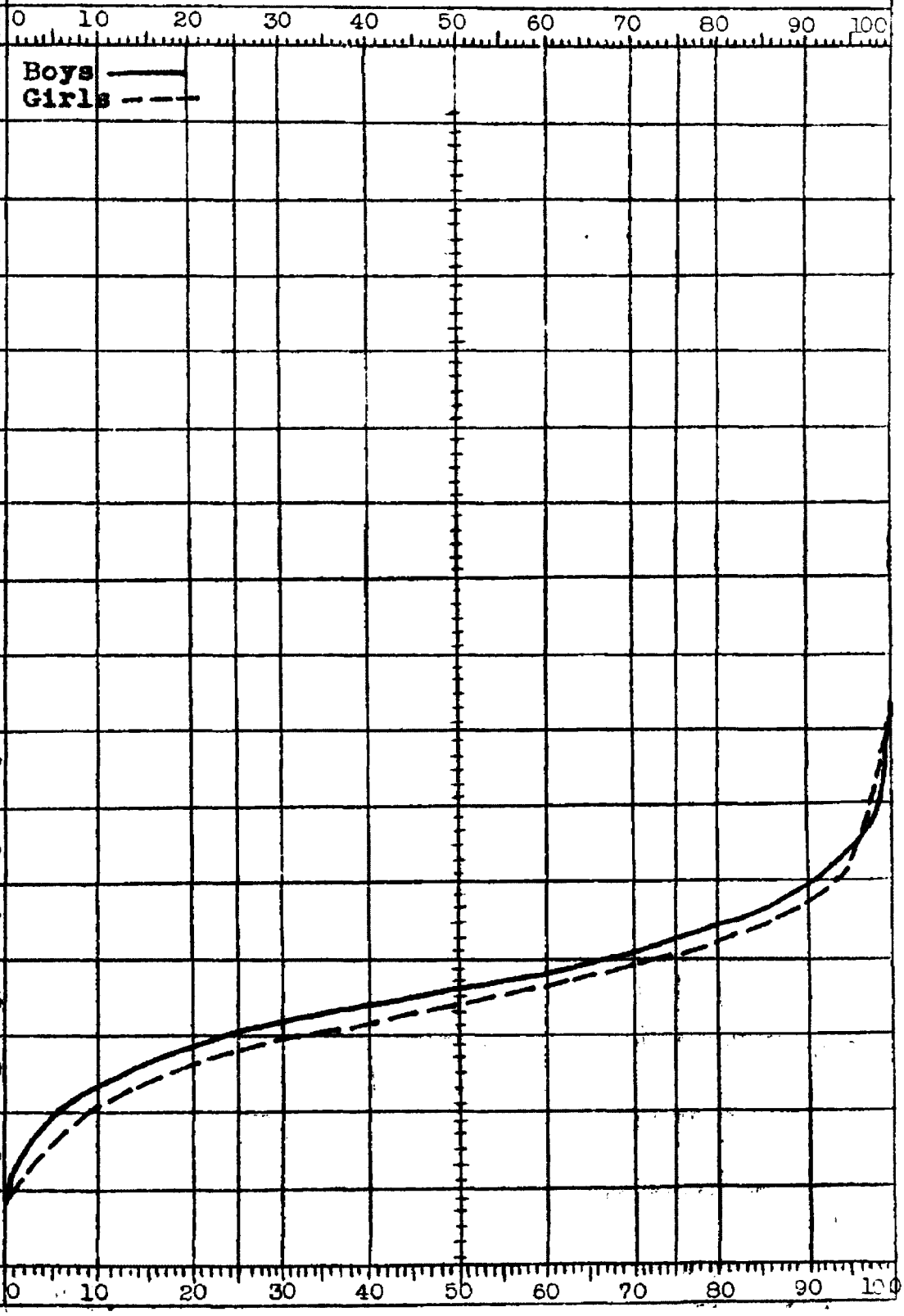
Intelligence of Juniors Whose Fathers Were Engaged in Agricultural Pursuits

	Boys	Girls	Both Sexes
Cases	98	167	265
Per Cent	10.46	17.82	28.28
Median I.Q.	105.59	103.69	104.52

The median I.Q. for both sexes was only .02 below the

Percentile Graph XIV
Intelligence of Juniors Raised on Farm By Sexes

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	1	98	1	167
129 - 120	7	97	9	166
119 - 110	23	90	34	157
109 - 100	42	67	63	123
99 - 90	19	25	44	60
89 - 80	6	6	16	16
79 - 70				
	98		167	



state median. A little less than one-third of the juniors were farmers' children. Percentile Graph XIV shows the intelligence by sexes of the juniors raised on the farm.

Table XLVII gives the intelligence of the juniors whose fathers were engaged in agricultural pursuits and those who were unemployed, or whose employment was not given.

Table XLVII

Intelligence of Juniors Whose Fathers were Engaged in Agriculture and Those not Employed in Any Occupation

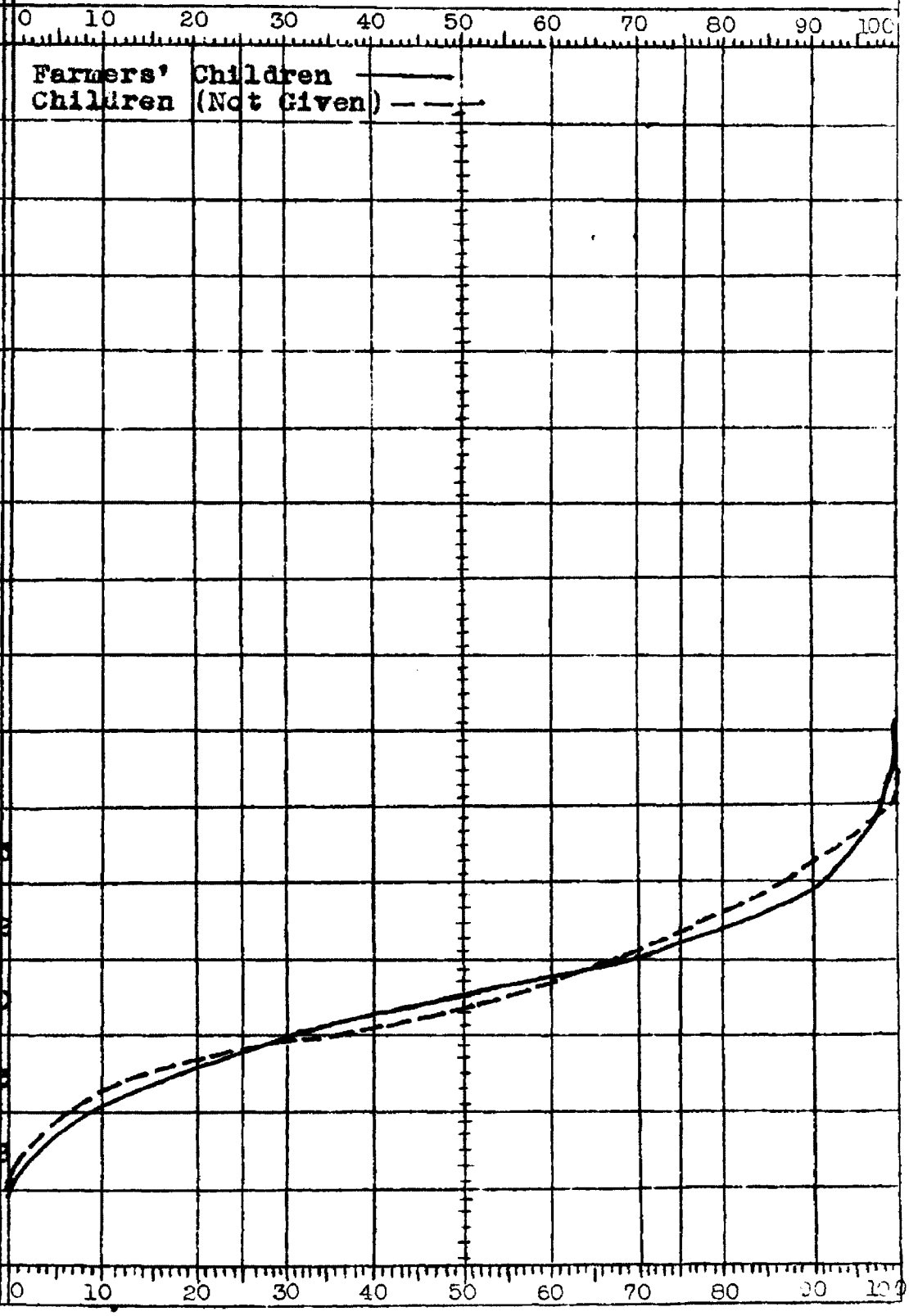
	Farming and Ranching	Unemployed or Not Given
Per Cent	28.28	12.27
Median I.Q.	104.52	103.78

In a comparison of the intelligence of those juniors whose fathers were engaged in farming and those who did not give any occupation for their father, the median I.Q. for the former group was found to be higher. One-eighth of the students gave no occupation for their fathers. Probably the most of these fathers were employed in seasonal or "odd jobs" occupations.

Percentile Graph XV compares intelligence of juniors raised on farm, and not given.

Percentile Graph XV
Intelligence of Juniors Raised on Farm and Not Given

Score	Farmers' Children T	Farmers' Children ST	Not Given T	Not Given ST
139 - 130	2	265		
129 - 120	16	263	13	115
119 - 110	57	247	22	102
109 - 100	105	190	37	80
99 - 90	63	85	35	43
89 - 80	22	22	8	8
79 - 70				
	265		115	



Intelligence as Related to Father's Occupation. Table XLVIII gives the occupations engaged in by the fathers of this group and the percentage by sexes in each occupation. Under "Skilled Artisans" the following occupations have been grouped for brevity and clearness: carpenter, jeweler, contractor, hod-carrier, pipe-fitter, plumber, linotype setter, locksmith, blacksmith, brick layer, telegrapher, manufacturer, baker, florist, watchmaker, painter, mason, printer, photographer, topman, harness-maker, tinsmith, drayman and trucker, plasterer, shoemaker, tailor, teamster, iceman, time-keeper, butcher and auctionneer. Under "Physician" the following fields have been grouped: doctor, optometrist, osteopath, dentist, and druggist. Under "Dealers": those in beverages, in coal, in Ford cars, in hardware, in transfer and baggage, and in elevator. Under the heading "Proprietor" the following occupations have been included: carpet shop, hotel, pool hall, restaurant, cigar store and theater. Under the grouping "County Officers": deputy, caretaker of the county poor, county treasurer, county commissioner, clerk of court, county road supervisor and county clerk and recorder. Under "City Officers" have been included: fire department, city auditor, jailer, health officer, and chief of police.

Table XLVIII

Distribution of Juniors According to Father's Occupation

Occupation	Boys		Girls		Both Sexes	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
Farmer and Rancher	98	10.46	167	17.82	265	28.28
Railroad	21	2.24	25	2.67	46	4.91
Miner	30	3.20	37	3.95	67	7.15
Electrician	5	.54	2	.21	7	.75
Civil Service	4	.42	5	.54	9	.96
Merchant	16	1.71	19	2.02	35	3.73
Foreman and Manager	9	.95	12	1.28	21	2.24
Unknown	54	5.76	61	6.51	115	12.27
Agent and Salesman	12	1.27	14	1.49	26	2.77
Business, Bookkeeping and Clerical Work	7	.74	9	.96	16	1.71
Lumbering	16	1.71	16	1.71	32	3.42
Law	8	.84	3	.33	11	1.17
Skilled Artisans	53	5.65	62	6.61	115	12.27
Physicians	1	.10	6	.65	7	.75
County Officers	3	.33	12	1.28	15	1.61
Dealers	5	.54	8	.84	13	1.37
Proprietors	5	.54	8	.84	13	1.37
Cook	1	.10			1	.10
Teacher	5	.54	5	.54	10	1.07
Retired	4	.42	6	.65	10	1.07
Mechanic and Machinist	8	.84	5	.54	13	1.37
Forester	3	.33	3	.33	6	.65
Night Watchman			3	.33	3	.33
Statistician			1	.10	1	.10
Telephone			1	.10	1	.10
Army Officer			1	.10	1	.10
Laundry	1	.10			1	.10
Barber	5	.54	3	.33	8	.85
Journalist			2	.21	2	.21
Buyers--Cattle and Grain	4	.42			4	.42
Oil Speculator	1	.10			1	.10
Jockey	1	.10			1	.10
Veterinary	1	.10	2	.21	3	.33
Minister	2	.21	6	.65	8	.85
Livestock Commissioner	1	.10			1	.10
Accountant	3	.33	2	.21	5	.54
Common Laborer	9	.95	7	.75	16	1.71

Table XLVIII (Con't)

Occupation	Boys Cases	Boys Per Cent	Girls Cases	Girls Per Cent	Both Sexes Cases	Both Sexes Per Cent
Chauffeur	1	.10			1	.10
Porter	1	.10			1	.10
City Officers	5	.54			5	.54
Auditor	1	.10			1	.10
Musician	1	.10			1	.10
Janitor	3	.33	4	.42	7	.75
Banker	4	.42	6	.65	10	1.07
Gas and Oil Service Man	1	.10	1	.10	2	.21
	413	44.07	524	55.93	937	100.00

The four occupations in which the majority of the fathers were engaged were: farmer and rancher, not working or not given, skilled artisans, and miners. Thirty-six groups of occupations were engaged in by the fathers of the Montana juniors.

Table XLIX gives the median I.Q. for the juniors whose fathers were engaged in the preceding occupations. The same grouping of occupations will be used. Percentile Graph XVI compares by sexes the intelligence of juniors whose fathers were engaged in farming and ranching pursuits and skilled artisan occupations.

Percentile Graph XVI

Comparison by Sexes of the Intelligence of Juniors Whose Fathers Were Engaged in Agricultural and Skilled Artisan Occupations

Score	Boys Farm T	Boys Farm ST	Boys Skilled Artisans T	Boys Skilled Artisans ST
139 - 130	1	98	1	86
129 - 120	7	97	4	52
119 - 110	23	90	6	48
109 - 100	42	67	17	42
99 - 90	19	25	18	25
89 - 80	6	6	6	7
79 - 70			1	1
	98		53	

Score	Girls T	Girls ST	Girls T	Girls ST
139 - 130	1	167		
129 - 120	9	166	4	62
119 - 110	34	157	6	58
109 - 100	63	123	29	52
99 - 90	44	60	18	23
89 - 80	16	16	5	5
79 - 70				
	167		62	

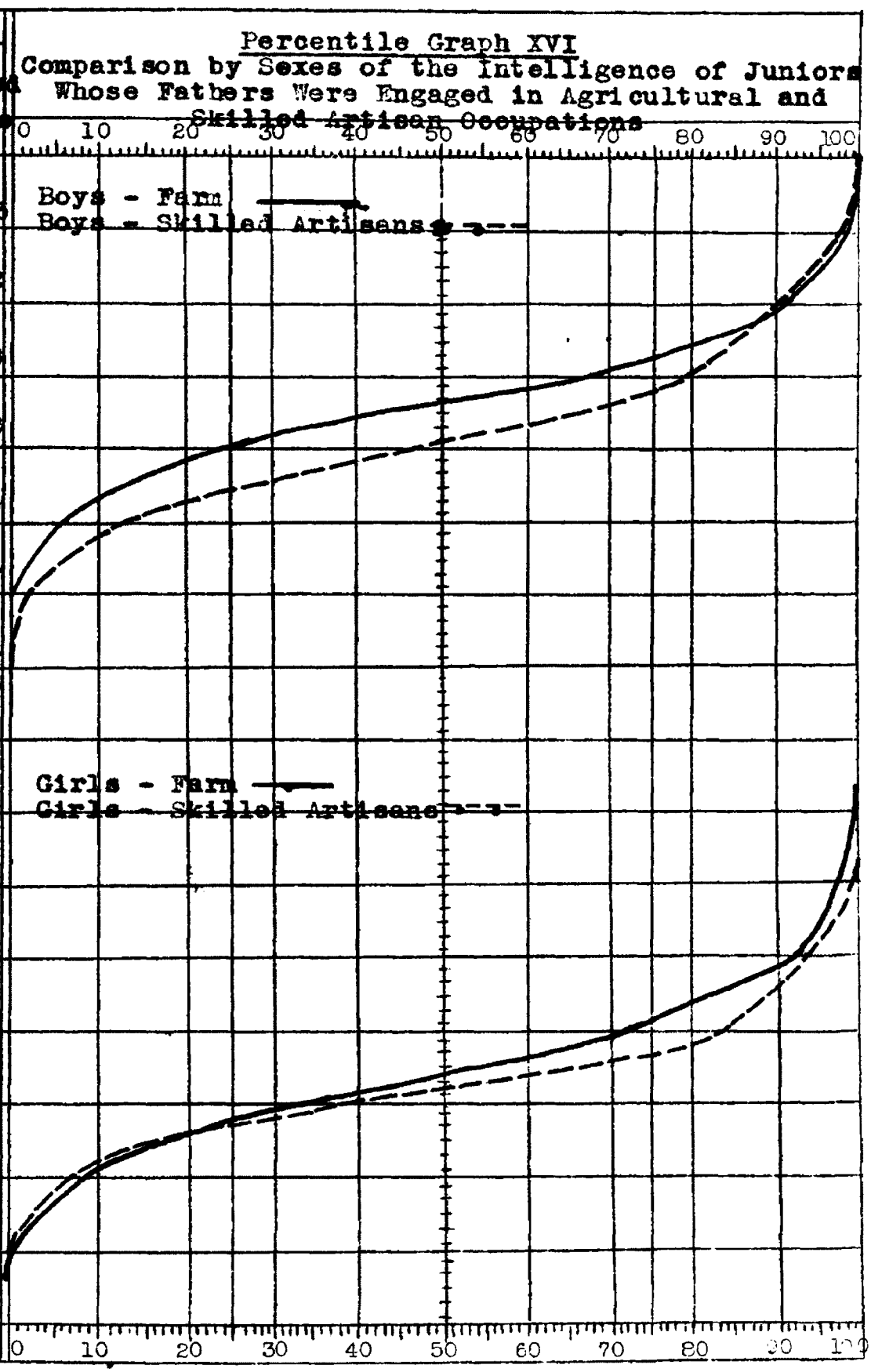


Table XLIX

Intelligence of Juniors According to Father's Occupation

Occupation	Median I.Q. Boys	Girls	Both Sexes
Farmer and Rancher	105.59	103.69	104.62
Railroad	101.50	104.64	103.09
Miner	101.04	102.64	101.94
Electrician	110.00	102.50	107.50
Civil Service	111.67	111.67	111.67
Merchant	103.75	105.83	105.50
Foreman and Manager	112.50	101.25	103.00
Unknown	103.23	104.25	103.78
Agent and Salesman	113.75	105.00	110.62
Clerical Work	110.00	96.25	99.00
Lumbering	105.83	102.14	103.79
Law	110.00	112.50	110.83
Skilled Artisans	100.88	101.89	101.45
Physician	105.00	100.00	101.75
County Officers	110.00	108.75	108.93
Dealers	102.50	101.67	101.95
Proprietors	110.00	100.00	103.67
Cook	105.00		105.00
Teacher	110.00	110.00	110.00
Retired	95.00	100.00	98.34
Mechanic and Machinist	102.50	105.00	103.60
Forester	105.00	112.50	108.75
Night Watchman		92.50	92.50
Statistician		105.00	105.00
Telephone		115.00	115.00
Army Officer		105.00	105.00
Laundry	105.00		105.00
Barber	110.00	105.00	106.00
Journalist		105.00	105.00
Buyer--Grain and Cattle	100.00		100.00
Oil Speculator	105.00		105.00
Jockey	95.00		95.00
Veterinary	105.00	105.00	105.00
Minister	105.00	102.50	103.15
Livestock Commissioner	125.00		125.00
Accountant	115.00	105.00	111.25
Common Laborer	101.67	100.00	100.87
Chauffeur	115.00		115.00
Porter	105.00		105.00
City Officers	105.00		105.00
Auditor	115.00		115.00

Table XLIX (Con't)

Occupation	Median I.Q. Boys	Girls	Both Sexes
Musician	115.00		115.00
Janitor	95.00	102.50	101.00
Banker	110.00	110.00	110.00
Gas and Oil Service Man	115.00	95.00	105.00
	105.24	103.97	104.54

Those occupations of the fathers in which the juniors had a median I.Q. of 110.00 and above were: civil service, agent and salesman, law, teacher, telephone, livestock commissioner, accountant, chauffeur, auditor, musician and banker. The additional occupations of the fathers in which the median I.Q. of the juniors was above the median I.Q.for the juniors whose fathers were engaged in agricultural pursuits were: electrician, merchant, foreman and manager, county officers, cook, forester, statistician, laundry, barber, journalist, oil speculator, porter, city officers, and gas and oil service man. All of the above listed occupations of the fathers had juniors whose median I.Q. was above the state median I.Q.

Summary. Nearly one-third of the fathers of the Montana juniors were engaged in agricultural pursuits. The median I.Q. of the juniors whose fathers were engaged in farming and ranching was near the median I.Q. for all the students of the state. The fathers of the juniors were engaged in thirty-six different groups of occupations. In general, the median I.Q.

of the juniors for each occupation the fathers were engaged in was equal to, or above, the amount of intelligence expected and considered necessary for the occupation. For instance, the median I.Q. of the juniors whose fathers were engaged in law, accountant, auditor, musician and banker was above 110.00. The greatest variation was found in the median I.Q. of the juniors whose fathers were chauffeurs or were retired. The median I.Q. of the junior whose father was a chauffeur was 115.00 while the median I.Q. for the juniors whose fathers were retired was only 98.34. The reverse would naturally be expected. However, there was only one student whose father was a chauffeur. The median I.Q. would undoubtedly have been lowered had there been more cases.

CHAPTER X

INTELLIGENCE AND CLASS RANKING

Each principal was asked to give the academic fifth in which each student ranked in his school work. Are the brightest juniors doing the best work? Are some of the most intelligent juniors found in the lowest academic fifth?

Juniors in the Highest Quintile. Only 784 students were given a rank by their high school principal or superintendent. Table L gives the intelligence of juniors in the upper fifth.

Table L

Intelligence of Juniors in the Upper Quintile

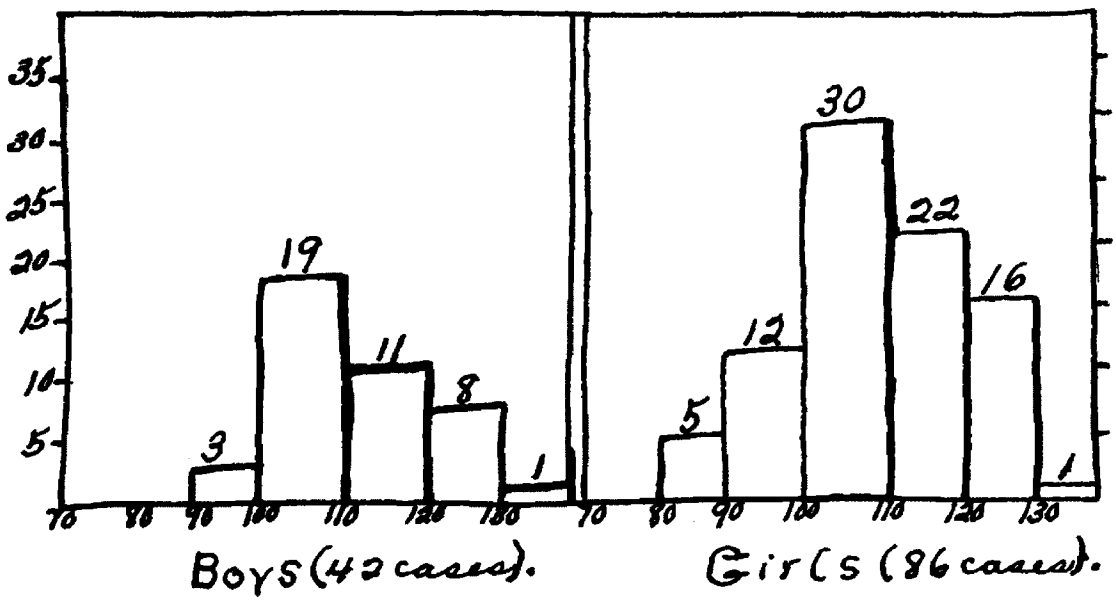
	Boys	Girls	Both Sexes
Cases	42	86	129
Per Cent	5.35	10.98	16.33
Median I.Q.	110.00	108.50	108.87

The boys had a 1.13 lead over the girls. Nevertheless, nearly twice as many girls as boys were found in the upper quintile. Book in his survey in Indiana reached the conclusion that school work was more adapted to the girls than boys. The fact that more girls of less ability than the boys were leaders in their class seems to confirm this statement. However the girls may have had the necessary characteristics

which make them a better student than the boys despite a lower intelligence quotient, such as determination, perseverance, willingness and others. It is to be noted that the students were to be ranked according to fifths, or twenty per cent of the students were to be ranked in each of the five groups. However, there were only 16.33% given in the upper quintile. Therefore the ranking of students must have been done by an arbitrary method rather than by a scientific procedure. Chart II shows the range of the students by sexes found in the upper quintile.

Chart II

Range of Intelligence in Highest Quintile



Juniors in the Second Fifth. Table LI shows the number, percentage and median I.Q. by sexes of the juniors in the

second quintile.

Table LI

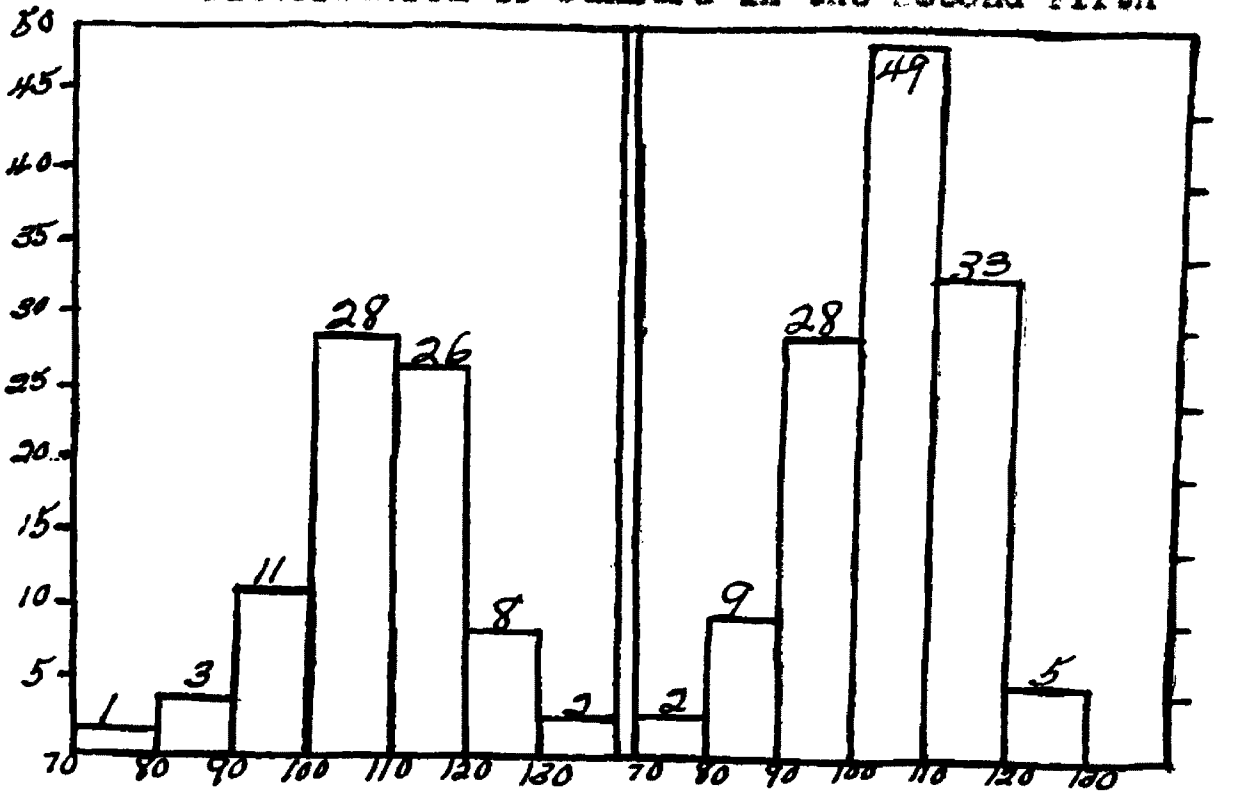
Intelligence of Juniors in Second Fifth

	Boys	Girls	Both Sexes
Cases	79	126	205
Per Cent	10.08	16.07	26.15
Median I.Q.	103.93	104.79	106.29

The second fifth contains more than one-fourth of the juniors. There are over one-half again as many girls than boys in the next to the highest fifth. Yet the median I.Q. for the boys in this fifth is higher than the median I.Q. of the girls in the highest fifth. The girls of this rank were only .25 of a point above the state median. The boys were over four points above the state median. In this group there are two boys in the 130 class and one in the 70 class, while there are two girls in the 70 class and none in the 130 class. In the highest fifth there were no students in the 70 class. Chart III shows the distribution of the juniors in the second quintile.

Chart III

Distribution of Juniors in the Second Fifth



Juniors in the Middle Quintile. Table LII gives the number, percentage and median I.Q. by sexes of the juniors in the middle quintile.

Table LII

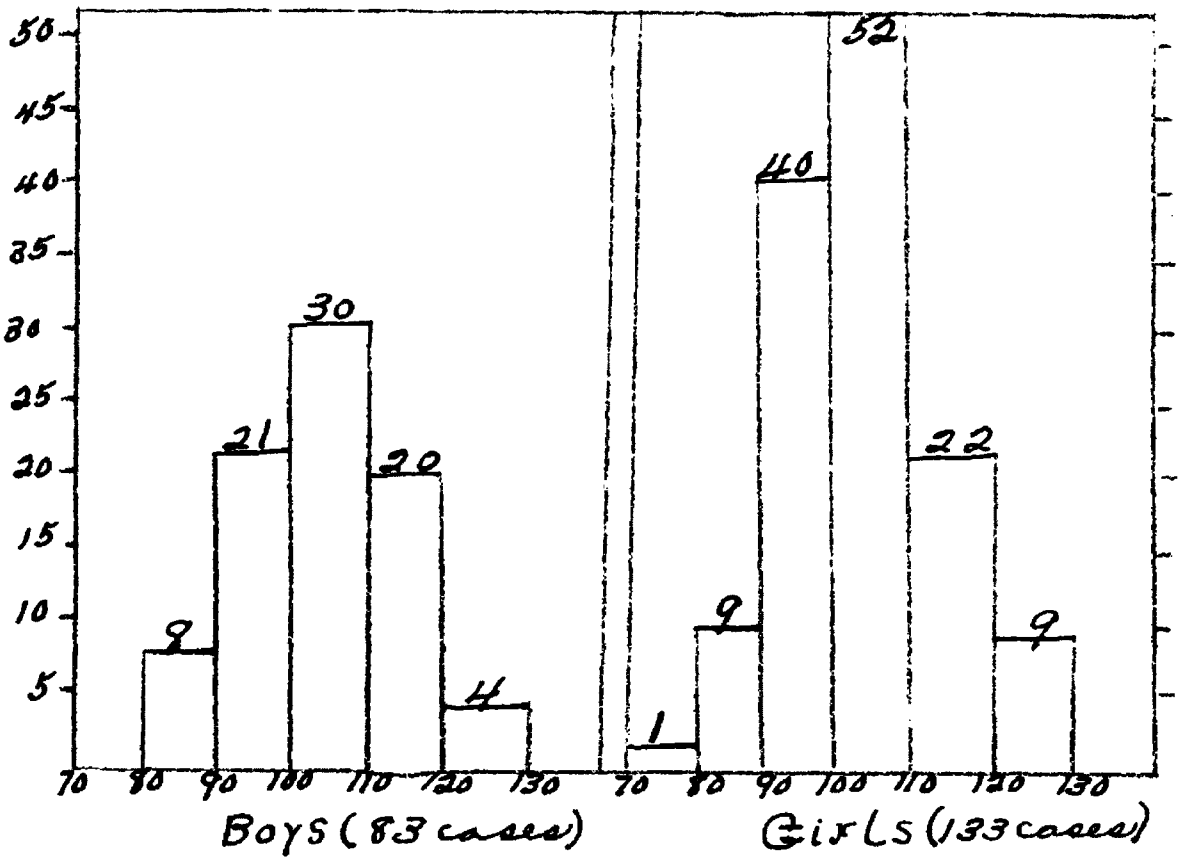
Intelligence of Juniors in the Middle Fifth

	Boys	Girls	Both Sexes
Cases	83	132	215
Per Cent	10.58	15.97	27.54
Median I.Q.	104.16	103.17	103.59

The median I.Q. for this group was below the state median. Nearly three-tenths of the juniors were in this group. There were about as many more girls as boys in this group as there were in the second quintile.

Chart IV

Distribution of Juniors in Middle Quintile



There were no students in the middle fifth that had an I.Q. of 130 or above. The boys in this group were not represented in the 70 class but the girls have one representative in that class.

Juniors in the Fourth Quintile. Table LIII gives the

number, percentage and median I.Q. of the juniors by sexes in the fourth fifth.

Table LIII

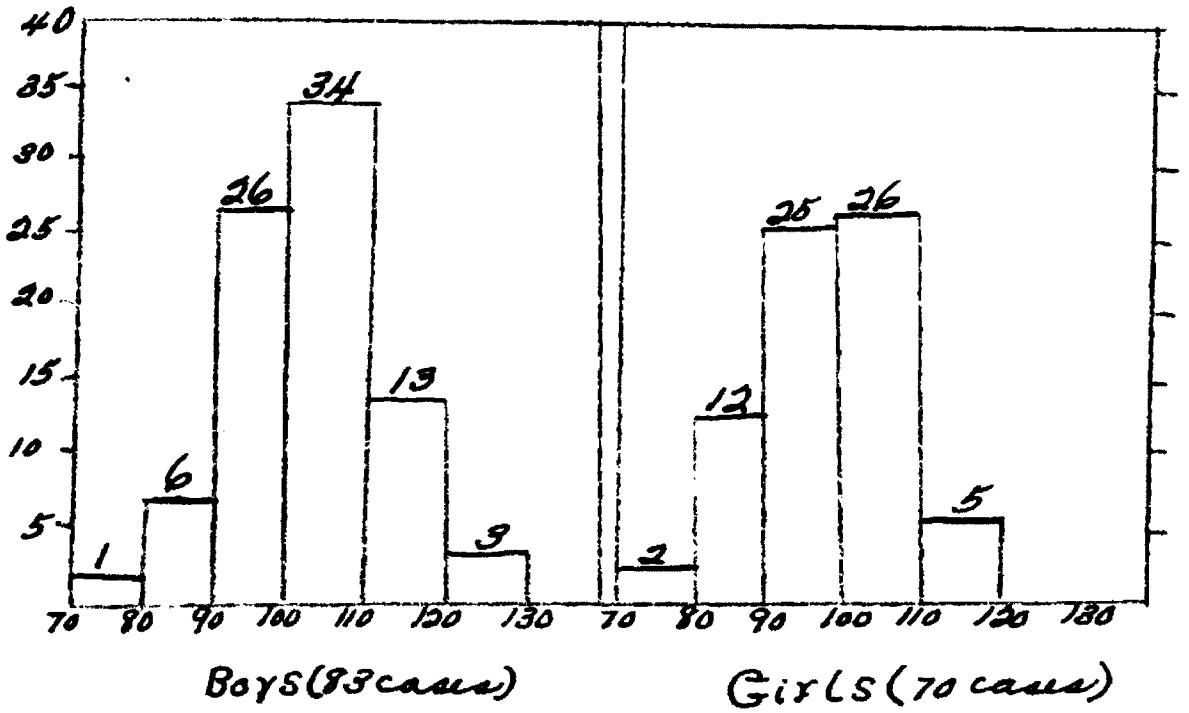
Intelligence of Juniors in the Fourth Quintile

	Boys	Girls	Both Sexes
Cases	83	70	153
Per Cent	10.58	8.92	19.50
Median I.Q.	102.50	98.20	101.83

A little less than one-fifth of the juniors were in this group. The students in this group were 2.71 points below the state median. For the first time there were more boys than girls in this group. Chart V gives the distribution by sexes of the juniors in the fourth quintile. The boys have four representatives in the 120 class but the girls do not have any students above the 110 class. The girls were over four points lower than the boys in median I.Q.

Chart V

Distribution of Juniors in the Fourth Quintile



The boys in the fourth quintile represent a greater range of ability than the girls.

Juniors in the Lowest Quintile. Table LIV gives the number, percentage and the median I.Q. of the juniors who were ranked in the lowest fifth.

Table LIV

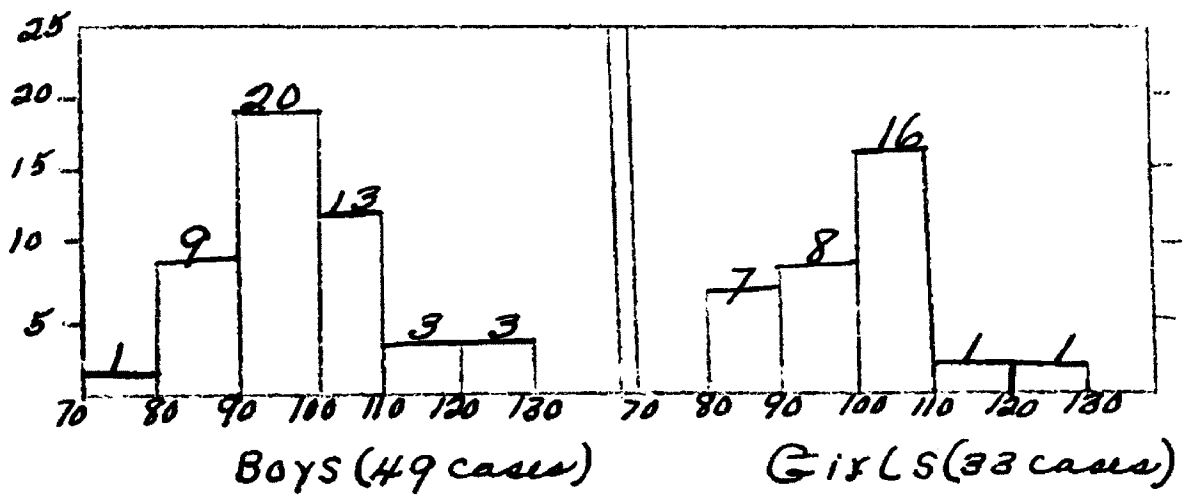
Intelligence of Juniors in the Lowest Quintile

	Boys	Girls	Both Sexes
Cases	49	33	82
Per Cent	6.26	4.21	10.47
Median I.Q.	98.25	100.94	98.75

Only about one-tenth of the juniors were found in this group. The median of this group is almost six points below the median for the state. The median of this fifth is slightly more than three points below the median of those students in the fourth quintile. The girls for the first time had a higher median I.Q. than the boys. Chart VI shows the distribution by sexes of the juniors in the lowest quintile.

Chart VI

Distribution of Juniors in the Lowest Fifth



There were four students in the 120 class and only one student in the 70 class. Less than one-half of the students in this group could be classed as inferior or dull students for whom the completion of high school would be doubtful.

Table LV gives the per cent and median I.Q. by sexes of the juniors in each quintile.

Table LV

Intelligence of Juniors in the Five Quintiles

	Boys		Girls		Both Sexes	
Quintile	%	Median	%	Median	%	Median
First	5.35	110.00	10.98	108.50	16.33	108.87
Second	10.08	108.93	16.07	104.79	26.15	106.29
Third	10.58	104.16	16.97	103.17	27.54	103.59
Fourth	10.58	102.50	8.92	98.20	19.50	101.83
Fifth	6.26	98.25	4.21	100.94	10.47	98.75

Summary. Going from the highest to the lowest fifth, there was a continual decrease in the number of girls but an increase in the number of boys. The median I.Q. becomes lower progressively for each fifth as one goes downward; that is, the students in the upper fifth were superior to those students in the second quintile, etc. through the fifth quintile. Only in the lowest fifth were the girls superior to the boys in their median I.Q. The boys, although they had the highest state median I.Q., were not ranked as high as the majority of the girls. If nearly one-fifth of the number of juniors over twenty per cent in the second and middle fifths were ranked in the highest fifth and the remaining number were placed in the fourth quintile, the number of students in each quintile would approximate twenty per cent to each group.

Evidently the ranking of students was not done in a scientific manner.

Chapter XI

INTELLIGENCE AND FULFILLMENT OF INTENTIONS

In April and May of this year (1933) a questionnaire sheet was sent to the present principals and superintendents of the schools which had formerly been used in this survey. The questionnaire carried the names of the juniors and the year they expected to graduate. The principal or superintendent was asked to indicate whether the student completed his high school course; if so, did he go on to school; if he went on, did he graduate and when; and what occupation the student is now in, if any. A column was also given so that the principal could give any additional information concerning the student. In several instances, the information sought for was given in this column.

High School Graduation. In Chapter IV it was found that all but twenty-five of the juniors were planning to graduate from high school.

Out of the 646 students found in the follow-up study, 616 had completed their high school course. Therefore, as far as can be determined, approximately 95 per cent of the juniors actually graduated from high school. No doubt many of the third not found also finished high school but had moved so that they could not be found. Table LVI shows the number by sexes that actually graduated from high school.

Table LVI

Distribution by Sexes of Juniors

Who Finished High School

Sex	Cases	Per Cent
Boys	275	42.58
Girls	341	52.78
Both Sexes	616	95.36

Forty-four and seven hundredths per cent of the juniors were boys. Thus only 1.48 per cent of the boys did not finish high school. Fifty-five and ninety-three hundredths per cent of the juniors were girls. Therefore, 3.16 per cent of the junior girls did not graduate from high school. Although, as indicated in Chapter X, the girls were ranked higher than boys in school work more boys than girls completed the high school course according to percentages.

Table LVII gives the median I.Q. by sexes for those juniors who graduated from high school.

Table LVII

Intelligence of Juniors who Graduated

from High School

	Boys	Girls	Both Sexes
Median I.Q.	105.89	104.91	105.29

The median I.Q. of those students who completed the high school course was .75 point higher than the state median for all juniors.

Table LVIII gives the comparison in tabular form of those intending to graduate and those who graduated.

Table LVIII

Comparison of Juniors Intending to Graduate and Those Who Graduated

	Planning to Graduate			Actually Graduated		
Sex	Cases	Per Cent	Median I. Q.	Cases	Per Cent	Median I.Q.
Boys	399	42.58	105.34	275	42.58	105.89
Girls	513	54.75	104.07	341	52.78	104.91
Both Sexes	912	97.33	104.69	616	95.36	105.29

From the above table it is shown that the median I.Q. of 616 juniors who completed the high school course was higher than the median I.Q. for 912 juniors who intended to graduate from high school. There was more difference in the median I.Q. of the girls than for the boys.

Table LIX shows the intelligence of the juniors who intended to graduate from high school but did not, and the intelligence of the juniors who did graduate.

Table LIX

Intelligence of Juniors Who Intended But Did Not and Those Who Did Graduate From High School

Sex	Intended But Did Not			Juniors Who Graduated		
	Cases	Per Cent	Median I.Q.	Cases	Per Cent	Median I.Q.
Boys	124	13.23	103.24	275	42.58	105.89
Girls	172	18.36	101.92	341	52.78	104.91
Both Sexes	296	31.59	102.57	616	95.36	105.29

Table LVIII indicated that there had been some selection between the intention to graduate from high school and those who finished high school. Table LIX serves to show that the median I.Q. of those students who planned to, but did not complete their high school course was considerably below the state median I.Q.

Juniors Who Went on to School. About 44 per cent of those who graduated from high school attended a school beyond secondary work. Table LX gives the number and the percentage of the juniors who went on to school.

Table LX

Distribution by Sexes of Juniors Who Went on to School

Sex	Cases	Per Cent (937)	Per Cent (616)
Boys	116	12.38	18.83
Girls	159	16.96	25.81
Both Sexes	275	29.34	44.64

Nearly one-half of all the juniors attended some school beyond high school. Table LX gives the median I.Q. of those juniors who went on to school.

Table LXI

Intelligence of Juniors Who Went on to School

	Boys	Girls	Both Sexes
Median I.Q.	107.07	105.92	106.50

The higher median I.Q. for those students who went on indicates that there must have been some selection on the basis of ability between high school graduation and school entrance at some other institution. Table LXI brings the median I.Q. of both groups together so that the difference can be seen more clearly.

Table LXII

Comparison of Intelligence of Those Students Who Graduated From High School Only and Those Who Went on to School

	Median I.Q.		
	Boys	Girls	Both Sexes
Graduated from High School	105.89	104.91	105.29
Went On To School	107.07	105.92	106.50

Percentile Graph XVII shows the intelligence by sexes of the juniors who went on to school.

Table LXII gives the median I.Q. of those juniors who intended to go on to school and of those who did go.

Table LXIII

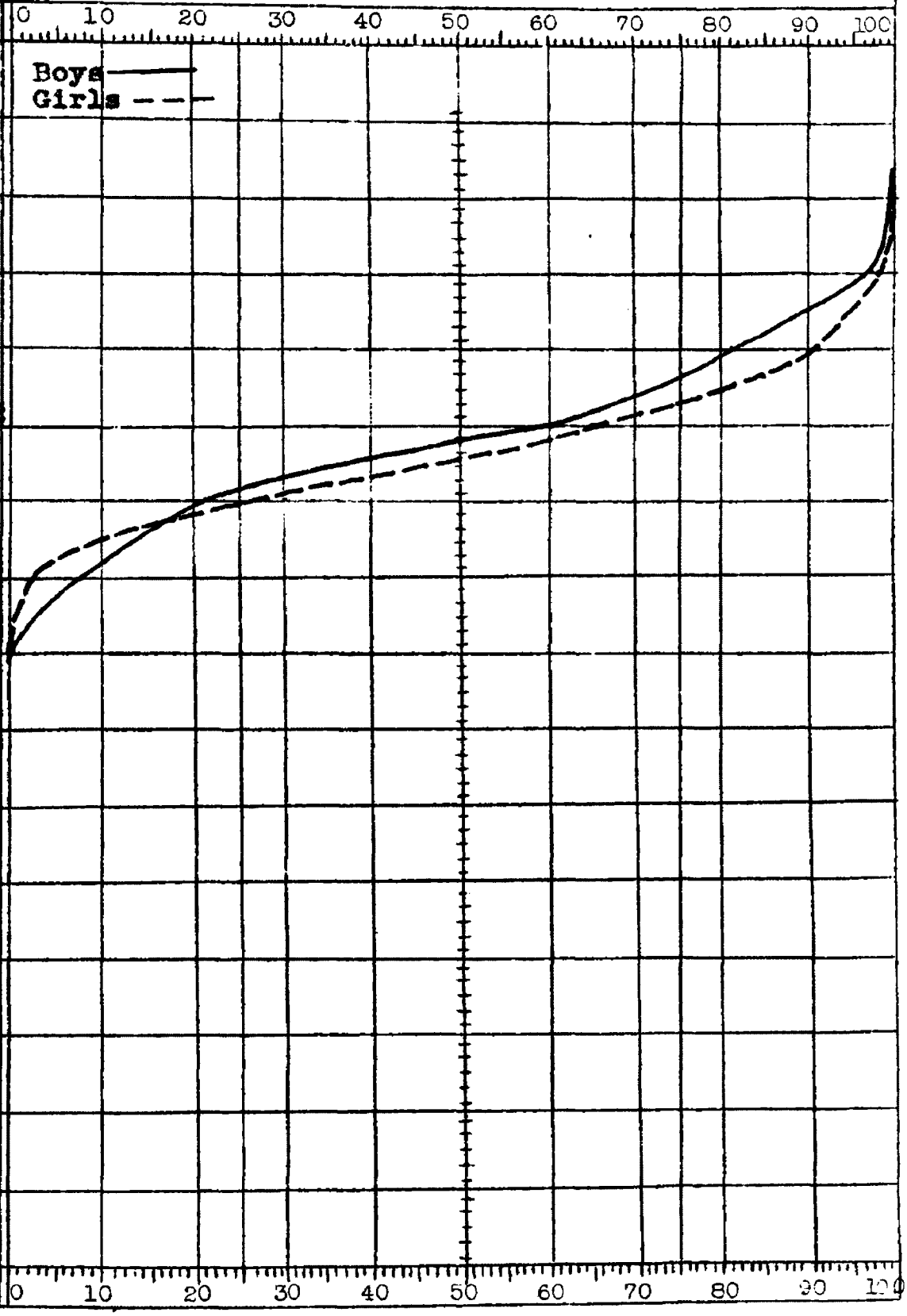
Intelligence of 675 Juniors Intending To Go and of 275 Who Went on to School

	Median I.Q.		
	Boys	Girls	Both Sexes
Went on to School	107.07	105.92	106.50
Intended to go On	106.27	104.39	105.20

Table LXIII further indicates that there had been selection or inability to fulfill intentions between those who intended to go on to school and those who actually went on to

Percentile Graph XVII
Intelligence of Juniors Who Went on to School

Score	Boys T	Boys ST	Girls T	Girls ST
139 - 130	3	116	2	159
129 - 120	18	113	15	157
119 - 110	24	95	38	142
109 - 100	46	71	60	104
99 - 90	16	25	39	44
89 - 80	9	9	5	5
79 - 70				
		116		159



some school.

Table LXIV gives the intelligence of the juniors who intended to go on to school but did not, and the intelligence of those juniors who actually went.

Table LXIV

Intelligence of Juniors Who Intended But Did Not and Those Who Went on to School

	Intended But Did Not			Went On To School		
Sex	Cases	Per Cent	Median I.Q.	Cases	Per Cent	Median I.Q.
Boys	169	18.04	105.08	116	12.38	107.07
Girls	229	24.44	103.20	159	16.97	105.92
Both Sexes	398	42.48	103.94	275	29.35	106.50

Tables LXIII and LXIV indicate that there had been considerable selection between those students who intended to go on to school, those who planned to go but did not go on to school, and those juniors who actually went on to school. The median I.Q. of the second group mentioned above was still below the state median I.Q. (104.54).

Types of Schools Attended. Table LXV gives the types of schools attended, the number and percentage of the juniors attending each institution.

Table LXV

Distribution of Juniors According to Type of School Attended

Schools	Boys Cases	Boys Per Cent	Girls Cases	Girls Per Cent	Both Sexes Cases	Both Sexes Per Cent
University	60	21.80	60	21.80	120	43.60
College and Technical	33	12.00	11	3.99	44	15.99
Business College	6	2.18	9	3.27	15	5.45
Normal	7	2.54	66	24.00	73	26.54
Trade School	8	2.99			8	2.99
Hospital			13	4.73	13	4.73
Bible Institute	1	.35			1	.35
Annapolis	1	.35			1	.35
	116	42.21	159	57.79	275	100.00

Three tenths of the juniors intended to attend a university. Forty-three and sixty hundredths per cent of two-thirds of the juniors actually attended a university. Originally 16.20% intended to attend a normal school. Actually 26.54% of two-thirds of the juniors went to a normal school. Thus a larger per cent of those students who actually finished high school attended a university and normal school than all of the juniors who had planned on going.

Table LXVI gives the median I.Q. by sexes for the juniors

who attended the various types of schools.

Table LXVI

Intelligence of Juniors According to Type of School

School	Median I.Q. Boys	Girls	Both Sexes
University	107.80	109.76	109.02
College and Technical	105.67	104.16	105.30
Business College	102.50	100.00	101.25
Normal	111.67	103.69	104.49
Trade School	95.00		95.00
Hospital		107.00	107.00
Bible Institute	105.00		105.00
Annapolis	115.00		115.00

With the exception of the boy who attended Annapolis, the students who attended a university had the highest median I.Q. Comparing the median I.Q. of the students who attended the various institutions with the median I.Q. of those intending to attend the same institutions as given in Table LXVII, there has been some selection in the way of ability in some cases.

Table LXVII

Intelligence of Juniors Who Attended and Planned To Attend the Same Institutions

School	Median I.Q. for Both Sexes	
	Planned to Attend	Attended
University	106.49	109.02
College and Technical	106.12	105.30
Business	106.52	101.25
Normal	103.84	104.49
Trade	107.00	95.00
Hospital	100.83	107.00
Annapolis	115.00	115.00

The student who planned to go to Annapolis actually attended that school. A large number of girls with a low median I.Q. had planned to enter nurses training but those who attended a hospital for training had a median I.Q. much above the state median for both sexes. The group of students who planned and took up business work had a lower median I.Q. than those who had planned to take up business. Over 100 or 84.1% of the 120 students who attended a university attended the University of Montana.

Graduated from a Higher School. Only 95 of the 275 juniors graduated from a higher institution. Table LXVIII

gives the number and percentages by sexes who graduated from an institution beyond high school.

Table LXVIII

Intelligence of Juniors Who Graduated From a Higher School

	Cases	Per Cent	Median I.Q.
Boys	34	5.27	107.31
Girls	61	9.44	106.73
Both Sexes	95	14.71	106.98

One-seventh of the Montana juniors succeeded in graduating from another institution beyond high school. Eight of the Montana juniors are now doing or have just completed graduate work. Table LXIX gives the number, percentage and median I.Q. by sexes of the juniors who have been or are doing graduate work.

Table LXIX

Intelligence of Juniors Doing Graduate Work

	Cases	Per Cent	Median I.Q.
Boys	4	.62	110.00
Girls	4	.62	112.50
Both Sexes	8	1.24	111.25

The median I.Q. of those students doing graduate work is 6.71 points above the state median for the juniors. It has been said that one of the purposes of the various institutions is selection. Table LXX shows the progressive selection that has been made at various stages on the Montana juniors in this study.

Table LXX

Intelligence of Montana Juniors at Various Stages in Their Education

	Median I.Q.		
	Boys	Girls	Both Sexes
State Median for Juniors	105.24	103.97	104.54
Not Planning to Graduate from High School	97.50	99.00	98.60
Planning to Graduate from High School	105.34	104.07	104.69
Graduated from High School	105.89	104.91	105.29
Went on to School	107.07	105.92	106.50
Graduated from Higher School	107.31	106.73	106.98
Doing Graduate Work	110.00	112.50	111.25

Occupations Now Following. The students are found in 44 variously grouped occupations. Of the 646 students found in the follow-up work, the occupation was not known for three-

tenths of the students. Table LXXI gives the occupations, the number and per cent in each occupation for the remaining seven-tenths. Under the head "Skilled Artisans" in the following table the following occupations have been classed: butcher, baker, architect, carpenter, barber, florist and printer. Under "Public Entertainer": players in dance orchestra, radio singer, dramatics director and movie actress. Under "Dealers": pool hall, hamburger shop, and wood yard. Under "Physician": dentist, druggist and osteopath. Under the heading "Miscellaneous" the following have been grouped: truck driver, fruit company employee, bee raiser, bootlegger, candy maker, rock garden expert, delivery boys, telephone operator, chauffeur, gardener, cleaners employee, bus driver and road worker.

Table LXXI

Distribution of Juniors According To

Occupation Now Following

	Boys		Girls		Both Sexes	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
Not Known	118	18.27	71	10.99	189	29.26
Not Working	4	.62	3	.46	7	1.09
Nurse			15	2.32	15	2.32
Teacher	10	1.56	63	9.75	73	11.31
Student	15	2.32	3	.46	18	2.78
Farmer	20	3.09	5	.77	25	3.86
Married			137	21.21	137	21.21
Housemaids			3	.46	3	.46
Waitress			4	.62	4	.62
Widow			1	.15	1	.15

Table LXXI (Con't)

Occupation	Boys Cases	Boys Per Cent	Girls Cases	Girls Per Cent	Both Sexes Cases	Both Sexes Per Cent
Librarian			2	.31	2	.31
Clerical Work	18	2.79	39	6.05	57	8.84
Mechanic	10	1.56			10	1.56
Salesman	7	1.09			7	1.09
Common Laborer	4	.62			4	.62
Electrician	8	1.24			8	1.24
County Officers	4	.62			4	.62
Gas & Oil Service Man	8	1.24			8	1.24
Merchant	3	.46			3	.46
Manager	3	.46			3	.46
Deceased	3	.46	8	1.24	11	1.70
Skilled Artisan	10	1.56			10	1.56
Military	2	.31			2	.31
Penitentiary	2	.31			2	.31
Insane Asylum	1	.15			1	.15
Minister	1	.15			1	.15
Agricultural Agent	1	.15			1	.15
Artist	1	.15			1	.15
Journalist	2	.31			2	.31
Public Entertainer	5	.77	3	.46	8	1.24
Lumberer	1	.15			1	.15
Forester	1	.15			1	.15
Dealers	4	.62			4	.62
Physician	3	.46			3	.46
Social Worker			1	.15	1	.15
Miner	1	.15			1	.15
Engineer	1	.15			1	.15
Accountant	1	.15			1	.15
Miscellaneous	14	2.18	2	.31	16	2.49
	286	44.26	360	55.73	646	100.00

Over one-tenth of those students, who were found, had entered the teaching profession and were now in it. More than one-half of the girls now married had been teachers but they are not included in the group "teaching now" unless after marriage they had continued to teach. There are over six times as many

junior girls in the teaching profession as there are junior boys. Almost one-tenth are in some clerical work. Table LXXII compares the percentages of the 937 who intended to enter certain occupations and the percentages of the 646 who were at the time of this survey in those occupations.

Table LXXII

Percentages of Students Planning to Enter and Those Who Entered Certain Occupations by Sexes

Occupations Selected	Planning to Enter (Per Cent)			Entered Certain Occupations (Per Cent)		
	Boys	Girls	Both	Boys	Girls	Both
Teaching	1.07	21.13	22.30	1.56	9.75	11.31
Nursing		4.37	4.37		2.32	2.32
Farming	2.98	.21	3.20	3.09	.77	3.86
Clerical Work	2.24	8.96	11.20	2.79	6.05	8.84
Electrician	1.60		1.60	1.24		1.24
			42.67			27.57

Of those who had intended to teach, about one-half actually did. In the other four occupations selected for comparison the percentage remains approximately the same.

Table LXXIII gives the median I.Q. of those students who really entered the various occupations by sexes.

Table LXXIII

Intelligence of Students Who Entered The Various Occupations

Occupation	Median I.Q.		
	Boys	Girls	Both Sexes
Not Known	105.34	102.50	104.29
Not Working	112.50	95.00	103.95
Nurse		110.00	110.00
Teacher	112.50	102.31	103.75
Student	103.56	105.00	103.80
Farmer	98.12	102.50	98.99
Married		105.34	105.34
Housemaids		100.00	100.00
Waitress		100.00	100.00
Widow		105.00	105.00
Librarian		110.00	110.00
Clerical Work	104.17	105.67	104.68
Mechanic	105.00		105.00
Salesman	102.50		102.50
Common Laborer	110.00		110.00
Electrician	110.00		110.00
County Officers	100.00		100.00
Gas & Oil Service Man	102.50		102.50
Merchant	110.00		110.00
Managers	110.00		110.00
Deceased	105.00	100.00	101.67
Skilled Artisan	96.25		96.25
Military	112.50		112.50
Penitentiary	92.50		92.50
Insane Asylum	115.00		115.00
Minister	105.00		105.00
Agricultural Agent	95.00		95.00
Artist	105.00		105.00
Journalist	110.00		110.00
Public Entertainer	98.75	100.00	99.27
Lumberman	105.00		105.00
Forester	105.00		105.00
Dealers	100.00		100.00
Physician	112.50		112.50
Social Worker		95.00	95.00
Miner	105.00		105.00

Table LXXIII (Con't)

Occupation	Median I.Q. Boys	Girls	Both Sexes
Engineer	105.00		105.00
Accountant	105.00		105.00
Miscellaneous	105.83	100.00	105.10

Those students who entered the teaching profession were below the state median of 104.54. Those students who became nurses had a median score much above the state median. The farmers were over five points below the state median. Table LXXIV gives the median I.Q. for those students who intended to enter certain occupations and the median I.Q. of those students who are now in those occupations.

Table LXXIV

Intelligence of Students Planning to Enter and Those Who Entered Certain Occupations by Sexes

	Median I.Q.					
	Planning to Enter			Entered		
Occupations	Boys	Girls	Both	Boys	Girls	Both
Teaching	110.00	104.32	105.05	112.50	102.31	103.75
Nursing		99.06	99.06		110.00	110.00
Farming	105.77	110.00	105.86	98.12	102.50	98.99
Clerical Work	105.50	102.43	103.22	104.17	105.67	104.68
Electrician	105.00		105.00	110.00		110.00

Per Cent Who Entered Occupation Planned for Earlier.

Eight years had passed since the earlier tests and questionnaires had been given. How many of the juniors later entered the work they had designated they would enter on the questionnaire? A very limited number actually fulfilled their earlier desires. Table LXXV gives the percentage by sexes of the students who entered the field of work that they earlier said they would enter.

Table LXXV

Percentage of Students Fulfilling Expressed Desires

	On Basis of 937		On Basis of 646	
	Cases	Per Cent	Cases	Per Cent
Boys	30	3.20	30	4.65
Girls	61	6.51	61	9.44
Both Sexes	91	9.71	91	14.09

On the basis of 937 only 9.71 of the juniors entered the occupations they had earlier expressed a desire to enter. Using the 646 students who were found in the follow-up study, approximately one-seventh (14.09) carried out their intentions. The present economic crisis may have had some effect. In one case, a girl who had been a stenographer was now a housemaid. She lost her job when the firm closed its doors. The number of such cases is not known so that the effect of

the "depression" cannot be determined.

Table LXXVI gives the median I.Q. by sexes for those students who carried out their intentions.

Table LXXVI

Intelligence of Students Fulfilling Expressed Desires

	Boys	Girls	Both Sexes
Median I.Q.	110.00	104.81	105.74

The students who actually carried out their intentions had a median I.Q. above the state median I.Q. One-third of the students had an I.Q. above 110.00. There were no students with an I.Q. from 70-79 and only two with an I.Q. from 80-89. Therefore students of average and above average ability are more apt to carry out their intentions than those students who have below average ability.

Summary. Nearly two-thirds of the Montana juniors had completed their high school course. The students who finished high school had a higher median I.Q. than those who planned to graduate. About 44% of those who graduated from high school attended a school beyond high school. The median I.Q. of those students who went on was higher than the median of those students who only completed the high school course. Over one-fifth of the students who went on to school attended a university. The most of these attended the Univer-

sity of Montana. The median I.Q. of those students who attended a university was nearly five points above the state median. Ten per cent of those who went on to school remained until they graduated. Approximately one per cent are doing graduate work. The median I.Q. for those students who are doing graduate work was more than six points above the state median. Only one-tenth of the Montana juniors fulfilled their expressed desires concerning a life occupation at the time this survey was made.

CHAPTER XII

SUMMARY AND CONCLUSIONS

No attempt has been made or will be made in this study to make any recommendations. That was not what the author had in mind. This study has been made only to discover the facts concerning the intelligence of Montana juniors in relation to various mental, social and economic factors. In some cases the information obtained confirmed the findings of others; in others the findings differed. Therefore, to that extent Montana juniors were different from the students in other states. No attempt has been made to prove anything. The information has been given just as it was found. In some cases where a variation from the findings of others was found an attempt has been made to explain, if possible, the variation.

Not all of the information given on the questionnaire has been used in this study. It has been omitted for two reasons: first, because it did not always bear directly on the field of interest; and second, because the data given were very inaccurate and incomplete. The last was the major reason for all omissions.

Summary and Conclusions.

1. The junior boys had a higher median I.Q. than the girls. With the exception of the students in the smallest

schools, the juniors had a median near the state median or above the state median I.Q. in the various sized schools. The students in the smaller schools were considerably below the median, though here, too, the girls had a higher median I.Q. than the boys.

2. The youngest student had the highest I.Q. score. In general the median I.Q. decreased with an increase in age. A girl was the youngest; and, also, the oldest student was a girl.

3. The general course was the most frequently offered course in the Montana high schools and approximately one-half of the students were taking this course in school. The students pursuing the classical course had the highest median I.Q.

4. The favorite subjects for the boys were sciences and mathematics. The girls liked English and the commercial subjects the best. However, the median I.Q. of the groups having subject preferences differed.

5. The girls disliked mathematics and the social sciences most; the boys English and the social sciences. The median I.Q. of the groups having subject dislikes differed.

6. The students not planning to graduate from high school had a median I.Q. nearly six points below the state median; one-half of these did not have definite plans for the future; and none were from "professional" homes.

7. The chances for high school graduation were greater in the smallest schools.

8. Approximately one-half of the juniors were planning to go to work at once upon the completion of their high school course. One-third of the students planning to go to work immediately after high school graduation did not know what they would do.

9. More than seventy per cent of the Montana juniors intended to go on to school. About one-third of these were going to work before they went on to school.

10. Almost one-third of the juniors planned to attend a university. One-fifth, approximately, of the Montana juniors intended to enter the State University of Montana.

11. Nearly three-fourths of the juniors had chosen an ultimate life occupation. Those students who had selected an occupation had a median I.Q. above the state average while those who had not made a selection had an average below the state median.

12. More than one-half of the juniors had been born in Montana. Those students born in Montana had a median I.Q. above the state median. More mothers were born in Montana and in the United States than fathers.

13. Approximately one-third of the fathers of the Montana juniors were engaged in agricultural pursuits. The median I.Q. of the students raised on the farm was practically the

same as the state median.

14. The students with the highest median I.Q. were found in the highest quintile; next highest in the second fifth; and so on. Evidently an objective plan was not used, since the principals did not rank twenty per cent in each fifth.

15. About 95 per cent of the juniors completed the high school course. Those who completed their high school course had a higher median I.Q. than those students who had planned to graduate from high school.

16. Approximately one-half of the students who finished high school attended a school beyond high school. One-tenth graduated from a school beyond high school. Over one per cent are doing graduate work at a higher institution.

17. Only one-seventh of the Montana juniors actually entered the occupation they had earlier expressed their intentions to enter.

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UNIVERSITY AT MISSOULA
SCHOOL OF MINES AT BUTTE

THE UNIVERSITY OF MONTANA

STATE UNIVERSITY
MISSOULA

STATE COLLEGE AT BOZEMAN
STATE NORMAL COLLEGE AT DILLON

Under another cover we are sending you copies of the Otis Self-administering Tests of Mental Ability to be given to the seniors, juniors, sophomores, and freshmen in your high school. We are sending you this number in order to supply you with tests for the students in each of those classes as stated in your letter to us.

We are also sending you the same number of questionnaires, the first part of which in each case is to be filled out by the student and the last part, at the bottom of the sheet, to be filled out by the principal.

Attached please find a mimeographed sheet of directions. We trust that you will follow these directions very carefully in giving the test in order that this test may be uniform in every part of the state where given.

I think the questionnaire which is to be filled out by each student is clear enough without comment. Please give the senior questionnaire to seniors only. You will note that there is another form of questionnaire for the freshmen, sophomores, and juniors. It may be that the students should have some advance information on certain items in the questionnaires before they are asked to fill them out. It might be well to tell them twenty-four hours in advance that the next day they would be asked to fill out a blank calling for each individual's height (with his shoes on), his weight (fully dressed but without overcoat or cloak), the approximate amount of his father's income, and the birth place of his father and his mother. The questionnaires should not be taken home for the reason that they may be lost.

Will you please send all test sheets and all questionnaires to us as soon as you can give the tests?

As soon as each school is scored we shall try to send the scores to the principal. Thanking you for your cooperation, and assuring you that we shall do the best we can to provide you with information about the conditions of your own school, and those of the state, I am,

Sincerely yours,

Professor of Education.

FLD:DG

Directions for Giving Tests

The "Self Administering" feature of this test makes it unnecessary for the person administering the test to give lengthy and detailed directions, since these are given directly to the pupil on the front page of the test itself. Four points should be kept in mind: (1) See that the pupils understand the directions on the front page, especially the underlining of the correct response and the placing of its number in the parenthesis. (2) See that all begin the tests at the same time. (3) After the test is begun answer no questions, permit no communication, and give no further directions except to see that the answers are put in the parentheses. (4) See that everyone stops after exactly 30 minutes.

Those administering an examination should realize that it is very important that conditions be uniform throughout the school and must be the same in the school being tested as in every other school where the examination has been given. For this reason, everything which needs to be said in administering the test is given below in large type, and the teacher should give these instructions verbatim, reading if necessary. If one teacher urges the students to work as rapidly as possible and another teacher urges them to work as carefully as possible, the results may be entirely different and not comparable. The teacher, therefore, should say nothing that is not prescribed, except to make clear the meaning of what is on the front page of the examination blank.

The best time to give the examination is probably at the opening of school in the morning, although the time of day probably does not have a serious effect upon the score.

Directions for administering: (See that every student is supplied with two pencils and an eraser.) To administer the examination, begin by addressing the students as follows:

"WE ARE GOING TO GIVE YOU THIS MORNING (AFTERNOON) SOME NEW AND INTERESTING TESTS. WE WILL NOW PASS THE TEST PAPERS AND AS SOON AS YOU RECEIVE A PAPER YOU MAY BEGIN TO FILL THE FIRST PAGE AND DO AS IT DIRECTS, FILLING IN BLANKS, ETC. DO NOT OPEN OR TURN OVER THE PAPER, PART OF THE TEST IS TO SEE IF YOU CAN FOLLOW DIRECTIONS."

Have monitors pass the papers, one to each student, right side up.

Allow a reasonable time for all to finish reading the front

page and trying the samples. A few laggards may be disregarded. Then say, "IS THERE ANYONE WHO DOES NOT UNDERSTAND THE FIRST PAGE?" Give any explanations necessary to make sure that all understand what is explained on the first page. Then say, "NOW TURN THE PAGE AND BEGIN." No further instructions are necessary.

Give no further directions and answer no questions. Stop the work at the end of exactly 30 minutes and have the papers collected. The person in charge during the examination will do well to move quietly about the room at the beginning of the examination and see that all are indicating the answers in a proper manner. If an examinee is found who is not placing the numbers in the parentheses, he should be told to do so.

OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

By ARTHUR S. OTIS

Formerly Development Specialist with Advisory Board, General Staff, United States War Department

HIGHER EXAMINATION: FORM A

20 Score.....

Read this page. Do what it tells you to do.

Do not open this paper, or turn it over, until you are told to do so. Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name.....Age last birthday.....years
First name, initial, and last name

Birthday.....Class.....Date.....192...
Month Day

School or College.....City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

Which one of the five words below tells what an apple is?

1 flower, 2 tree, 3 vegetable, 4 fruit, 5 animal.....(4)

The right answer, of course, is "fruit"; so the word "fruit" is underlined. And the word "fruit" is No. 4; so a figure 4 is placed in the parentheses at the end of the dotted line. This is the way you are to answer the questions..

Try this sample question yourself. Do not write the answer; just draw a line under it and then put its number in the parentheses:

Which one of the five words below means the opposite of north?

1 pole, 2 equator, 3 south, 4 east, 5 west.....( )

The answer, of course, is "south"; so you should have drawn a line under the word "south" and put a figure 3 in the parentheses. Try this one:

A foot is to a man and a paw is to a cat the same as a hoof is to a—what?

1 dog, 2 horse, 3 shoe, 4 blacksmith, 5 saddle.....( )

The answer, of course, is "horse"; so you should have drawn a line under the word "horse" and put a figure 2 in the parentheses. Try this one:

At four cents each, how many cents will 6 pencils cost?..... ( )

The answer, of course, is 24, and there is nothing to underline; so just put the 24 in the parentheses.

If the answer to any question is a number or a letter, put the number or letter in the parentheses without underlining anything. Make all letters like printed capitals.

The test contains 75 questions. You are not expected to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to begin. Try to get as many right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

Do not turn this page until you are told to begin.

Published by World Book Company, Yonkers-on-Hudson, New York, and 2126 Prairie Avenue, Chicago
 OSATMA: HE: A-6

EXAMINATION BEGINS HERE:

1. The opposite of hate is (?)
   1 enemy, 2 fear, 3 love, 4 friend, 5 joy ..... ( )
2. If 3 pencils cost 5 cents, how many pencils can be bought for 50 cents? ..... ( )
3. A bird does not always have (?)
   1 wings, 2 eyes, 3 feathers, 4 a nest, 5 a bill ..... ( )
4. The opposite of honor is (?)
   1 glory, 2 disgrace, 3 cowardice, 4 fear, 5 defeat ..... ( )
5. A fox most resembles a (?)
   1 wolf, 2 goat, 3 pig, 4 tiger, 5 cat ..... ( )
6. Quiet is related to sound in the same way that darkness is related to (?)
   1 a cellar, 2 sunlight, 3 noise, 4 stillness, 5 loud ..... ( )
7. A party consisted of a man and his wife, his two sons and their wives, and four children in each son's family. How many were there in the party? ..... ( )
8. A tree always has (?)
   1 leaves, 2 fruit, 3 buds, 4 roots, 5 a shadow ..... ( )
9. The opposite of economical is (?)
   1 cheap, 2 stingy, 3 extravagant, 4 value, 5 rich ..... ( )
10. Silver is more costly than iron because it is (?)
    1 heavier, 2 scarcer, 3 whiter, 4 harder, 5 prettier ..... ( )
11. Which one of the six statements below tells the meaning of the following proverb? "The early bird catches the worm." ..... ( )

    1. Don't do the impossible.
    2. Weeping is bad for the eyes.
    3. Don't worry over troubles before they come.
    4. Early birds like worms best.
    5. Prompt persons often secure advantages over tardy ones.
    6. It is foolish to fret about things we can't help.

12. Which statement above tells the meaning of this proverb? "Don't cry over spilt milk." .... ( )
13. Which statement above explains this proverb? "Don't cross a bridge till you get to it." .... ( )
14. An electric light is related to a candle as an automobile is to (?)
    1 a carriage, 2 electricity, 3 a tire, 4 speed, 5 glow ..... ( )
15. If a boy can run at the rate of 6 feet in ¼ of a second, how far can he run in 10 seconds? .... ( )
16. A meal always involves (?)
    1 a table, 2 dishes, 3 hunger, 4 food, 5 water ..... ( )
17. Of the five words below, four are alike in a certain way. Which is the one not like these four?
    1 bend, 2 shave, 3 chop, 4 whittle, 5 shear ..... ( )
18. The opposite of never is (?)
    1 often, 2 sometimes, 3 occasionally, 4 always, 5 frequently ..... ( )
19. A clock is related to time as a thermometer is to (?)
    1 a watch, 2 warm, 3 a bulb, 4 mercury, 5 temperature ..... ( )
20. Which word makes the truest sentence? Men are (?) shorter than their wives.
    1 always, 2 usually, 3 much, 4 rarely, 5 never ..... ( )
21. One number is wrong in the following series. What should that number be?
    1 4 2 5 3 6 4 7 5 9 6 9 ..... ( )
22. If the first two statements following are true, the third is (?) All members of this club are Republicans. Smith is not a Republican. Smith is a member of this club.
    1 true, 2 false, 3 not certain ..... ( )
23. A contest always has (?)
    1 an umpire, 2 opponents, 3 spectators, 4 applause, 5 victory ..... ( )
24. Which number in this series appears a second time nearest the beginning?
    6 4 5 3 7 8 0 9 5 9 8 8 6 5 4 7 3 0 8 9 1 ( )
25. The moon is related to the earth as the earth is to (?)
    1 Mars, 2 the sun, 3 clouds, 4 stars, 5 the universe ..... ( )
26. Which word makes the truest sentence? Fathers are (?) wiser than their sons.
    1 always, 2 usually, 3 much, 4 rarely, 5 never ..... ( )

27. The opposite of awkward is (?)
1 strong, 2 pretty, 3 short, 4 graceful, 5 swift ( )

28. A mother is always (?) than her daughter.
1 wiser, 2 taller, 3 stouter, 4 older, 5 more wrinkled ( )

29. Which one of the six statements below tells the meaning of the following proverb? "The burnt child dreads the fire." ( )

1. Frivolity flourishes when authority is absent.
2. Unhappy experiences teach us to be careful.
3. A thing must be tried before we know its value.
4. A meal is judged by the dessert.
5. Small animals never play in the presence of large ones.
6. Children suffer more from heat than grown people.

30. Which statement above explains this proverb? "When the cat is away, the mice will play." ( )

31. Which statement above explains this proverb? "The proof of the pudding is in the eating." ( )

32. If the settlement of a difference is made by mutual concession, it is called a (?)
1 promise, 2 compromise, 3 injunction, 4 coercion, 5 restoration ( )

33. What is related to disease as carefulness is to accident?
1 doctor, 2 surgery, 3 medicine, 4 hospital, 5 sanitation ( )

34. Of the five things below, four are alike in a certain way. Which is the one not like these four?
1 smuggle, 2 steal, 3 bribe, 4 cheat, 5 sell ( )

35. If 10 boxes full of apples weigh 400 pounds, and each box when empty weighs 4 pounds, how much do all the apples weigh? ( )

36. The opposite of hope is (?)
1 faith, 2 misery, 3 sorrow, 4 despair, 5 hate ( )

37. If all the odd-numbered letters in the alphabet were crossed out, what would be the tenth letter not crossed out? Print it. *Do not mark the alphabet.* ( )
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

38. What letter in the word SUPERFLUOUS is the same number in the word (counting from the beginning) as it is in the alphabet? Print it. ( )

39. What people say about a person constitutes his (?)
1 character, 2 gossip, 3 reputation, 4 disposition, 5 personality ( )

40. If 2½ yards of cloth cost 30 cents, what will 10 yards cost? ( )

41. If the words below were arranged to make a good sentence, with what letter would the second word of the sentence begin? Make it like a printed capital.
same means big large the as ( )

42. If the first two statements following are true, the third is (?) George is older than Frank. James is older than George. Frank is younger than James.
1 true, 2 false, 3 not certain ( )

43. Suppose the first and second letters in the word CONSTITUTIONAL were interchanged, also the third and fourth letters, the fifth and sixth, etc. Print the letter that would then be the twelfth letter counting to the right ( )

44. One number is wrong in the following series. What should that number be?
0 1 3 6 10 15 21 28 34 ( )

45. If 4½ yards of cloth cost 90 cents, what will 2½ yards cost? ( )

46. A man's influence in a community should depend upon his (?)
1 wealth, 2 dignity, 3 wisdom, 4 ambition, 5 political power ( )

47. What is related to few as ordinary is to exceptional?
1 none, 2 some, 3 many, 4 less, 5 more ( )

48. The opposite of treacherous is (?)
1 friendly, 2 brave, 3 wise, 4 cowardly, 5 loyal ( )

49. Which one of the five words below is most unlike the other four?
1 good, 2 large, 3 red, 4 walk, 5 thick ( )

50. If the first two statements following are true, the third is (?) Some of Brown's friends are Baptists. Some of Brown's friends are dentists. Some of Brown's friends are Baptist dentists.
1 true, 2 false, 3 not certain ( )

51. How many of the following words can be made from the letters in the word LARGEST, using any letter any number of times?
great, stagger, grasses, trestle, struggle, rattle, garage, strangle ( )

52. The statement that the moon is made of green cheese is (?)
1 absurd, 2 misleading, 3 improbable, 4 unfair, 5 wicked ( )

 Do not stop. Go on with the next page.

53. Of the five things following, four are alike in a certain way. Which is the one not like these four?
1 tar, 2 snow, 3 soot, 4 ebony, 5 coal..... ( )

54. What is related to a cube in the same way in which a circle is related to a square?
1 circumference, 2 sphere, 3 corners, 4 solid, 5 thickness..... ( )

55. If the following words were seen on a wall by looking in a mirror on an opposite wall, which word would appear exactly the same as if seen directly?
1 OHIO, 2 SAW, 3 NOON, 4 MOTOR, 5 OTTO..... ( )

56. If a strip of cloth 24 inches long will shrink to 22 inches when washed, how long will a 36-inch strip be after shrinking?..... ( )

57. Which of the following is a trait of character?
1 personality, 2 esteem, 3 love, 4 generosity, 5 health..... ( )

58. Find the two letters in the word DOING which have just as many letters between them in the word as in the alphabet. Print the one of these letters that comes first in the alphabet..... ( )
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

59. Revolution is related to evolution as flying is to (?)
1 birds, 2 whirling, 3 walking, 4 wings, 5 standing..... ( )

60. One number is wrong in the following series. What should that number be?
1 3 9 27 81 108..... ( )

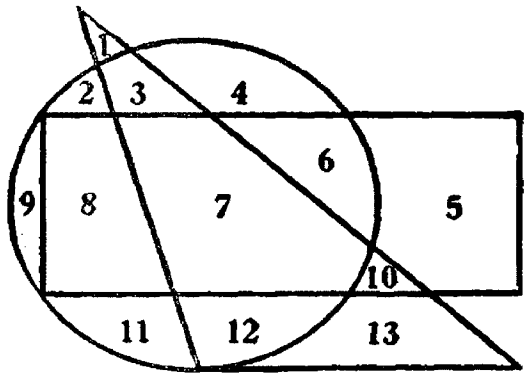
61. If Frank can ride a bicycle 30 feet while George runs 20 feet, how far can Frank ride while George runs 30 feet?..... ( )

62. Count each N in this series that is followed by an O next to it if the O is not followed by a T next to it. Tell how many N's you count.
N O N T Q M N O T M O N O O N Q M N N O Q N O T O N A M O N O M ..... ( )

63. A man who is averse to change and progress is said to be (?)
1 democratic, 2 radical, 3 conservative, 4 anarchistic, 5 liberal..... ( )

64. Print the letter which is the fourth letter to the left of the letter which is midway between O and S in the alphabet..... ( )

65. What number is in the space which is in the rectangle and in the triangle but not in the circle? ( )



66. What number is in the same geometrical figure or figures as the number 8?..... ( )

67. How many spaces are there that are in any two but only two geometrical figures?..... ( )

68. A surface is related to a line as a line is to (?)
1 solid, 2 plane, 3 curve, 4 point, 5 string..... ( )

69. If the first two statements following are true, the third is (?) One cannot become a good violinist without much practice. Charles practices much on the violin. Charles will become a good violinist.
1 true, 2 false, 3 not certain..... ( )

70. If the words below were arranged to make the best sentence, with what letter would the last word of the sentence end? Print the letter as a capital.
sincerity traits courtesy character of desirable and are..... ( )

71. A man who is influenced in making a decision by preconceived opinions is said to be (?)
1 influential, 2 prejudiced, 3 hypocritical, 4 decisive, 5 impartial..... ( )

72. A hotel serves a mixture of 2 parts cream and 3 parts milk. How many pints of cream will it take to make 15 pints of the mixture?..... ( )

73. What is related to blood as physics is to motion?
1 temperature, 2 veins, 3 body, 4 physiology, 5 geography..... ( )

74. A statement the meaning of which is not definite is said to be (?)
1 erroneous, 2 doubtful, 3 ambiguous, 4 distorted, 5 hypothetical..... ( )

75. If a wire 20 inches long is to be cut so that one piece is $\frac{2}{3}$ as long as the other piece, how long must the shorter piece be?..... ( )

ligh School Juniors, Sophomores and Freshmen

PART I. (To be filled out by the student.)

1. Name of school.....Junior, Sophomore, Freshman.
(Check class to which you belong)
2. Print your name..... Boy or Girl.
(Last name) (First name) (Check correct one)
3. What is your present age in years?..... Months?.....
4. What two subjects do you like best in high school? .....
5. What two subjects do you like least in high school? .....
6. What course are you taking in high school?.....
7. Do you plan to remain in high school until you graduate? .....
8. If not, what kind of work do you expect to take up when you withdraw?.....
9. Do you plan to go to work immediately after you graduate from high school?.....
10. If so, what kind of work do you plan to do?.....
11. Do you plan to go to some other school or college after you graduate?.....
12. If so, name the school, college or university.....
13. Give the date when you expect to graduate from high school.....
14. What do you plan to follow for a life occupation ultimately? .....
15. Does anything prevent you from carrying out this plan?..... What?.....
.....
16. Counting this one, how many semesters have you attended high school altogether?.....
17. How many different high schools have you attended since you began your high school work?.....
18. Name them .....
19. In what state or country were you born?.....
20. In what state or country was your father born? .....
21. In what state or country was your mother born? .....
22. What is your father's occupation?.....
23. About how much is your father's annual income? .....
24. Give your height (with your shoes on)..... .....
25. Give your weight (fully dressed but without overcoat or cloak) .....

PART II. (To be filled out by the Principal.)

1. In what academic fifth of his class does this student rank? .....
2. How many days of absence stand against the record of this student during his entire high school career? .....
3. What was the chief cause of such absence?.....
4. Was lack of interest, truancy or delinquency a factor? .....
5. Do you keep permanent individual school-life records in your school system?.....
6. Does the course mentioned under (6) above prepare for college? .....
7. Will you please make certain that the student has filled out his part of this questionnaire completely and has answered questions 6, 7, and 8 correctly? .....
8. If this student has taken any other intelligence test, name test and give score.....
.....
9. Is this student upon his own resources to such an extent that he is earning much or all of his way
.....

NOTICE

In the spring of 1925 Mr. Daughters and Mr. Ames, members of the School of Education faculty at the State University of Montana, had the Otis Self-Administering Test of Mental Ability given in selected high schools in the state of Montana. The Otis Test was supplemented by a questionnaire. In order to work up the information concerning those students who were juniors in 1925, I wish to follow those students to determine the extent to which their expressed intentions have been fulfilled.

Enclosed on a separate sheet or sheets are a list of those students who were juniors in the spring of 1925 in your school.

Will you please fill out the requested information concerning each student? If you are new to the community, please give these sheets to someone else in your town or city who will know most or knew most of the juniors from your school.

Please return this information to me not later than June 1, 1933. Enclosed you will find a self-addressed, stamped envelope.

THANK YOU.

Please fill out carefully. If the student attended a hospital for nurses training, a trade school or institute, mechanical or auto school, etc., please include under "School Attended". Under the column "Other Information" write the reasons, if you know, why the student did not finish school or any particular interest or hobby he may have. Also, if you wish to enlarge upon any of the previous answers, place it in the last column.

JUNIORS 1924-1925.

NAME	GRADUATED FROM H.S.	WENT ON TO SCHOOL	WHAT SCHOOL	GRADUATED WHEN	OCCUPATION IN	OTHER INFORMATION